State of California
AIR RESOURCES BOARD

STAFF REPORT ON APPROVAL OF A REVISION TO THE OZONE STATE IMPLEMENTATION PLAN FOR THE SAN FRANCISCO BAY AREA

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State of California
California Environmental Protection Agency
AIR RESOURCES BOARD

STAFF REPORT

PUBLIC MEETING TO CONSIDER THE APPROVAL OF THE 1999 SAN FRANCISCO BAY AREA OZONE ATTAINMENT PLAN FOR THE 1-HOUR NATIONAL OZONE STANDARD AS A REVISION TO CALIFORNIA'S STATE IMPLEMENTATION PLAN (SIP)

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EXECUTIVE SUMMARY

Why did the Bay Area need to prepare a new ozone plan and what are the requirements?

Over the past several years, the Bay Area has moved in and out of attainment for the federal one-hour ozone standard. In 1991, the U.S. Environmental Protection Agency (U.S. EPA) classified the Bay Area as a "moderate" nonattainment area for the national one-hour ozone standard (of 0.12 parts per million), with an attainment date of 1996. From 1990 to 1994, the Bay Area attained the standard. In late 1994, we forwarded a request to U.S. EPA to redesignate the Bay Area as attainment, along with a maintenance plan describing how the Bay Area would stay in compliance. In May 1995, U.S. EPA approved the maintenance plan and redesignated the Bay Area as attainment.

Almost immediately following the redesignation to attainment, the Bay Area had hot, stagnant weather that led to high ozone levels -- 11 days above the standard in 1995 and 8 days in 1996. On July 10, 1998, in response to the numerous violations, U.S. EPA redesignated the Bay Area back to nonattainment and established a new attainment date of November 15, 2000. In the *Federal Register* notice of action (63 FR 37258), U.S. EPA required a revision to the State Implementation Plan (SIP) by June 15, 1999 that was to include: a 1995 emission inventory for volatile organic compounds (VOC) and nitrogen oxides (NOx); an assessment of the emission reductions needed to attain the ozone standard by 2000, using available data and technical analyses; a control strategy sufficient to attain the standard by 2000; and contingency measures.

What is the relationship of the Bay Area Plan to the California SIP?

The Bay Area Plan is a SIP revision and will become part of the California SIP upon approval by U.S. EPA. The California SIP contains all of the elements of the state and local programs to attain and maintain the national ambient air quality standards. These elements include the monitoring program, emission inventory, modeling, plans for attainment and progress, measures to reduce emissions, permitting programs, and other enforcement mechanisms to ensure that the necessary reductions are achieved. Control strategies may include both existing rules and regulations, as well as commitments for future measures to be adopted by air and transportation agencies. For ozone, these strategies focus on reducing emissions of the two chemical precursors -- VOC and NOx. Once a local SIP revision is adopted by the Air Resources Board (ARB) and approved by U.S. EPA, the elements become federally enforceable.

Does the recent court decision on the new federal standards affect the Bay Area Plan?

No. Although U.S. EPA established a new ozone standard of 0.08 ppm over eight hours in 1997, the one-hour ozone standard (which was not affected by the court decision) continues to apply until an area attains that standard. On May 14, 1999, a three-judge panel of the U.S. Court of Appeals for the District of Columbia ruled that U.S. EPA cannot enforce the eight-hour ozone standard. The ruling may be overturned, or U.S. EPA may re-establish the standard with a different basis. As a practical matter, the new measures in the Bay Area Plan are needed to meet the current federal one-hour ozone standard, as well as California's own more health-protective ozone standard which is comparable in health protection to the federal eight-hour ozone standard.

Which agencies developed and adopted the Bay Area Plan?

The Bay Area Air Quality Management District (Bay Area District), together with its co-lead agencies, the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG), prepared the *San Francisco Bay Area 1999 Ozone Attainment Plan for the 1-Hour National Ozone Standard* (Bay Area Plan). The Bay Area District, ABAG, and MTC adopted the Plan on June 16, 17, and 23, respectively.

What is the technical basis for the attainment assessment?

The attainment assessment in the Bay Area Plan is based on past photochemical modeling work. The Bay Area District staff relied on modeling of a September 1989 ozone episode at the peak site in Livermore. Using the projected NOx emission reductions for 1995 to 2000 from existing measures only, the Bay Area District staff determined the level of VOC reductions needed to bring Livermore into attainment with the standard, based on the 1989 modeling. The attainment assessment is based on a 1995 emissions inventory of 562 tpd VOC and 626 tpd NOx, grown to the year 2000. The Bay Area District did not include a detailed 2000 emissions inventory in the Plan, but provided us with a copy of the complete inventory that underlies the attainment assessment. We are providing the year 2000 inventory for informational purposes since U.S. EPA did not require its submittal as part of this SIP revision.

What emission reductions are needed in the Bay Area for attainment?

The attainment assessment shows that if NOx emissions are reduced to 534 tpd by June 1, 2000, then VOC emissions must be reduced to 434 tpd to attain the standard. Existing adopted measures provide all of the 92 tpd NOx reductions. Local, state, and federal measures already in the SIP emissions baseline for 2000 provide 117 tpd of the 128 tpd needed VOC reductions, leaving 11 tpd of additional VOC reductions needed for attainment. The VOC baseline emissions reflect new VOC reductions of 13.5 tpd that the District commits to achieve through permitting and enforcement actions to increase the effectiveness of refueling controls at service stations.

What new stationary source control measures does the Bay Area Plan include?

The Bay Area Plan identifies 10 additional stationary and area source control measures to meet the VOC emissions target. Five of the control measures are adopted, but not yet incorporated into the SIP – these existing measures provide 4.6 tpd of VOC reductions. The District is committing to adopt new controls for polystyrene manufacturing, organic liquid storage, and gasoline dispensing facilities, as well as two new measures affecting aeration of contaminated soils – these new measures will yield 6.6 tpd of VOC reductions.

What new mobile source control measures does the Bay Area Plan include?

The Bay Area Plan relies on an ARB measure for electric golf carts that had not been included in the SIP emissions baseline, plus two voluntary local measures. The bulk of mobile measures with benefit between 1995 and 2000 are already adopted and already reflected in the SIP baseline – e.g., cleaner passenger vehicles, trucks, and off-road equipment, as well as cleaner gasoline. Such mobile source measures account for 90 percent of the total VOC plus NOx reductions in the Bay Area between 1995 and 2000. Mobile measures typically show increasing benefits after implementation as fleet turnover expands the number of cleaner vehicles.

Although most of the mobile source emission reductions come from technological improvements in engines and fuels, transportation control measures (TCMs) also benefit air quality by reducing motor vehicle use or activity. Twenty-eight of these measures were included in the Bay Area's 1994 maintenance plan and are almost complete. The Bay Area Plan proposes to withdraw four TCMs from the Ozone SIP because they are either permanent (e.g., Guadalupe light rail line and BART Colma station) or reduce only carbon monoxide emissions. The remaining TCMs consist of new carpool lanes, signal timing, freeway incident management, and increased state gas tax and bridge tolls.

The Bay Area Plan also contains two voluntary mobile source measures: Spare the Air Program and Low Emission Alternatively Fueled Vehicles and Infrastructure. These programs are expected to reduce both VOC and NOx emissions. However, the Bay Area Plan claims no emission reductions from these measures because of concerns about a U.S. EPA guidance policy that calls for regulatory "backstops" if voluntary measures are used for SIP credit.

Does the Bay Area Plan affect transportation conformity?

Yes. The Clean Air Act requires transportation plans to conform to air quality plans. Because the attainment assessment in the Bay Area Plan relies on lower emissions from on-road motor vehicles for the year 2000 than in the previous maintenance plan, the emissions budget for transportation conformity must be updated. The differences are due to changes in the emissions models and from implementation of additional controls. The emissions budget is derived from the 1995 emissions inventory in the Bay Area Plan, after accounting for the effects of growth and control. The new budget for transportation conformity is 175 tpd VOC and 247 tpd NOx, and will become effective upon U.S. EPA's finding of adequacy.

Does the Bay Area Plan include adequate reductions, given the violations of the standard in 1998?

The numerous violations of the standard in 1998 is evidence of the strong influence that weather in the Bay Area has on air quality. For areas close to the ozone standard, weather variations can make the difference between meeting and exceeding the standard in a particular year, despite steadily declining emissions. The violations in 1998 are troublesome, since the majority of the emission reductions projected to result in attainment had already been achieved. These violations emphasize the need to continue reducing emissions in the Bay Area until the standard can be attained under all weather conditions. The District's commitments in the Bay Area Plan for additional emission reductions (6.6 tpd VOC from new measures and 13.5 tpd VOC from increased enforcement at service stations) will continue progress toward this goal.

While there is technical uncertainty as to the specific reductions needed, we believe the strategies in the Bay Area Plan are a reasonable approach, given the twelve-month timeframe to develop and implement measures, and the lack of an up-to-date modeling analysis. However, new local, state, and federal measures need to be pursued to ensure maintenance of the federal one-hour ozone standard and attainment of the more health-protective state ozone and particulate standards -- not just in the Bay Area, but also in downwind communities affected by Bay Area pollution.

Can the Bay Area attain the standard by November of 2000?

Not officially, because three clean years are needed to attain the standard. The Bay Area Plan is designed to prevent violations of the standard in the 2000 ozone season. If the Bay Area succeeds in meeting this goal, the region would still need another two years of monitoring data without violations to be considered in attainment. The Clean Air Act allows for two, one-year extensions of the attainment deadline; the Bay Area Plan assumes the District will request at least one extension.

Would the Bay Area Plan be expected to cause a significant adverse environmental or economic impact?

No. As required under the California Environmental Quality Act (CEQA), the Bay Area District evaluated the potential environmental impacts of the Plan and found that the control measures will not result in significant adverse environmental effects. The Bay Area District Board approved a Negative Declaration as required by CEQA for the Bay Area Plan. ARB staff concurs with the District's findings.

Is the Bay Area Plan consistent with federal requirements and approvable as a SIP revision?

Yes. The Plan contains the required 1995 emission inventory for VOCs and NOx, an attainment assessment, a control strategy projected to attain the standard by 2000, contingency measures, and a revised emissions budget for transportation conformity. The three co-lead agencies have also met the administrative requirements for public participation in SIP revisions.

What action is the staff recommending to the Board?

ARB staff recommends that the Board approve the Bay Area Plan as a SIP revision, specifically the 1995 emissions inventory for VOC and NOx, the attainment assessment, the control strategy, the new transportation conformity budget, and the contingency measures. Staff is recommending further that the Board direct the Executive Officer to submit this SIP revision to U.S. EPA as soon as possible.

I. INTRODUCTION

The San Francisco Bay Area Air Basin covers Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma Counties (see Figure I-1). The Bay Area Air Quality Management District (District) is the air quality agency responsible for the entire basin. The Bay Area is California's second largest metropolitan region with a population of about six million, about 20 percent of the statewide total. Pollution sources in the region also account for about 20 percent of the statewide emissions of ozone-forming volatile organic compounds (VOC) and nitrogen oxides (NOx).

Figure I-1

In response to numerous violations of the federal one-hour ozone standard in 1995 and 1996, the U.S. Environmental Protection Agency (U.S. EPA) redesignated the Bay Area as nonattainment; required a new attainment plan by June 15, 1999; and established an attainment deadline of November 15, 2000. In the July 10, 1998 notice of action (63 FR 37258) and subsequent correspondence, U.S. EPA defined the required elements of State Implementation Plan (SIP) revision to include:

- a 1995 emission inventory for VOC and NOx;
- an assessment of the emission reductions needed to attain the standard by 2000, using available data and technical analyses;
- a control strategy sufficient to attain the standard by 2000;
- revised emissions budget for transportation conformity; and
- contingency measures.

Air quality planning in the Bay Area is the joint responsibility of three agencies: the District, the Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). The District took the lead in developing the *San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* (Bay Area Plan) by preparing the 1995 emissions inventory, the attainment assessment, and those portions of the control

strategy pertaining to stationary and area sources. MTC, the regional transportation planning agency, was responsible for reviewing and updating the transportation control measure element. ABAG, as the agency responsible for coordinating land use planning in the Bay Area, provided support by reviewing and commenting on the draft portions of the Plan. The boards of the District, ABAG, and MTC adopted the Plan on June 16, 17, and 23, 1999, respectively.

This Staff Report briefly describes: air quality in the Bay Area, recent clean air plans and applicable requirements, the contents of the 1999 Bay Area Plan and staff's evaluation, the Air Resources Board's (ARB's) legal authority, and the potential environmental impacts. This Report also includes the projected emission inventory for the year 2000 based on existing measures, which the District chose not to include in the Bay Area Plan. Finally, the report presents our conclusions and recommendations to the Board.

A. Air Quality in the Bay Area

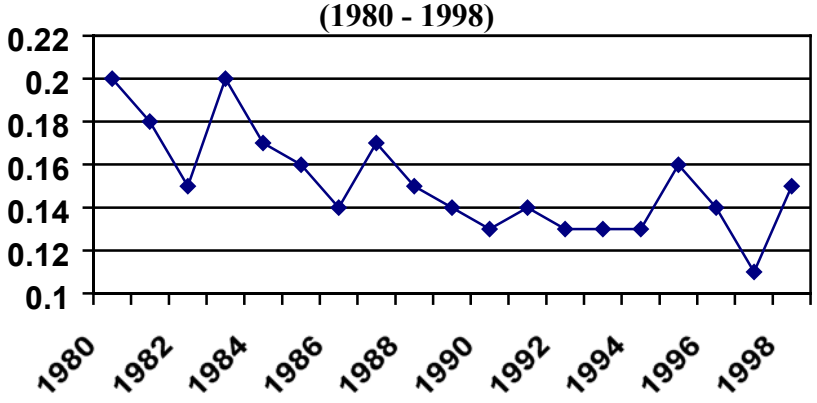
Overall, air quality in the Bay Area is much better than in other urban areas of California, largely due to its cooler temperatures and better ventilation. The climate in the Bay Area varies, ranging from mild temperatures all year along the coast, to warmer temperatures with greater seasonal fluctuation in the inland counties. This variation can also be seen in the ozone levels -- lower along the coast and higher in the inland valleys.

The District operates 25 routine monitoring sites for ozone in the Bay Area. The monitoring station located in the Livermore Valley typically records the highest ozone levels. Most of the measured exceedances of the standard in 1995, 1996, and 1998 occurred at this site. The other monitoring stations that showed days over the standard include Concord, Los Gatos, San Martin, and Gilroy.

In general, air quality in the Bay Area has steadily improved since the late 1980s as shown in Figure I-2. Determining the actual trends of air quality over time is difficult because of the large role that meteorology plays. While this is true of all areas, it appears even more so for the Bay Area in recent years. Because the Bay Area climate is characterized by cooler temperatures and steady ocean breezes, changes from that regime from year to year cause pollutant concentrations to change accordingly, in spite of steadily declining emissions. Air quality trends evaluated over long periods of time, such as 10 to 20 years, minimize the impact that meteorology may have on ozone levels in any single year. In the Bay Area, meteorological conditions generally favored poor air quality in 1995, 1996, and 1998 and relatively good air quality in 1990-1994 and in 1997 when the Bay Area had the lowest ozone levels since 1954.

Figure I-2

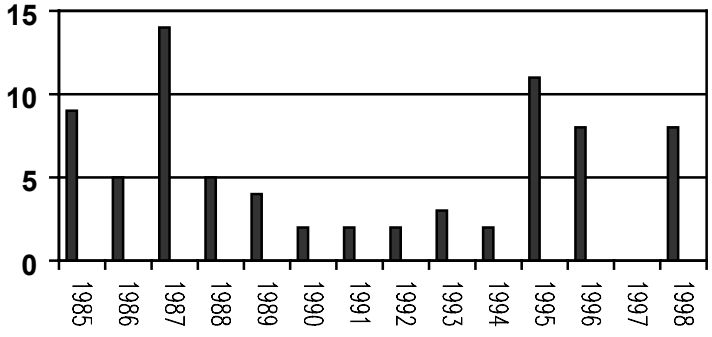
Maximum 1-Hour Ozone Concentrations in the Bay Area (1980 - 1998)



The Bay Area experienced 11 days over the national ozone standard in the summer of 1995, eight days in 1996, and eight days again in 1998 (see Figure I-3). The effects can be attributed to differences in the number and severity of episodes of "ozone conducive" weather. Even though there has been steady progress in reducing total emissions of VOCs and NOx in the Bay Area, the reductions have not been enough to prevent violations under all meteorological conditions..

Figure I-3

Number of Days National 1-Hour Ozone Standard Exceeded (1985 - 1998)



B. Air Quality Planning in the Bay Area

This section briefly reviews the relevant planning provisions in both the federal Clean Air Act (FCAA) and the California Clean Air Act (CCAA), and describes recent Bay Area plans. While the Bay Area Plan is specifically designed to fulfill federal planning requirements only, plans for the state requirements provide some insight into previous commitments for new measures.

1. Federal Clean Air Act Planning Provisions

The FCAA establishes specific requirements for nonattainment areas. For ozone, nonattainment areas are classified as marginal, moderate, serious, severe, or extreme, based on the severity of the problem. The planning and control requirements, as well as the time allowed to reach attainment (from 1994 to 2010), vary based on the area's classification. Areas classified serious and above were required to develop, adopt, and submit attainment demonstrations by November 15, 1994. The 1994 California State Implementation Plan for Ozone (SIP) contains the overall strategy for achieving the federal one-hour ozone standard in the six nonattainment areas. Although the SIP does not explicitly address the Bay Area, the significant new state and federal measures in the SIP provide benefits statewide.

The Bay Area was designated as nonattainment with a moderate classification, which carried an automatic attainment date of 1996. Moderate and above areas were required to develop, adopt, and submit a "15 Percent Rate-of-Progress Plan" showing how the area would reduce VOC emissions by 15 percent between 1990 and 1996. Because of the near-term attainment date, moderate areas were not required to submit plans with air quality modeling to demonstrate how the area would attain the ozone standard. Since there were no violations of the ozone standard in the Bay Area between 1990 and 1993 when the 15 Percent Plan was due, the District instead prepared a request for redesignation to attainment that included an ozone maintenance plan.

a. Bay Area 1994 Ozone Maintenance Plan

After experiencing clean air (no violations) from 1990 to 1994, the Bay Area District submitted a request to U.S. EPA for redesignation to attainment for the federal one-hour ozone standard. U.S. EPA approved the redesignation request and accompanying maintenance plan on May 22, 1995. The Ozone Maintenance Plan had five elements: an attainment inventory (based on 1990 emission levels), a maintenance demonstration, a monitoring network, a verification of continued attainment, and a contingency plan. The contingency plan to be implemented if there were subsequent violations of the standard included enhancements to the inspection and maintenance (I & M) program and more stringent stationary source NOx controls.

b. Requirements for the Bay Area 1999 Ozone Plan

After reviewing the violations of the standard in 1995 and 1996, U.S. EPA determined that the contingency measures in the approved ozone maintenance plan were not sufficient to bring the Bay Area back into attainment. Instead, U.S. EPA redesignated the Bay Area as

nonattainment once again and called for a new plan to demonstrate attainment by November 15, 2000.

In the July 10, 1998 *Federal Register* notice of redesignation, U.S. EPA provided an extended discussion of the "streamlined" requirements that would govern the Bay Area's new ozone attainment plan. U.S. EPA determined that the existing FCAA classification system does not apply to the Bay Area and redesignated the Bay Area under the general provisions of the FCAA in order to allow for maximum flexibility in defining the applicable planning requirements. U.S. EPA, in stating that it wanted the Bay Area District and its co-lead agencies to focus on emission reductions and not on a burdensome and duplicative planning effort, identified only three elements for the Bay Area's nonattainment plan:

- a 1995 baseline emission inventory for VOC and NOx;
- an attainment assessment, i.e., an analysis of the amount of VOC and NOx reductions necessary for the region to re-attain the national ozone standard; and
- a control strategy that will provide the emission reductions sufficient to attain the ozone standard.

In subsequent correspondence, U.S. EPA added a revised emissions budget for transportation conformity to this list.

2. California Clean Air Act Planning Provisions

On a triennial basis, the Bay Area District is required to update its air quality plan to meet requirements in the 1988 California Clean Air Act (CCAA). The CCAA requires districts that violate the state one-hour ozone standard of 0.09 ppm to prepare comprehensive clean air plans to ensure steady progress towards attainment. Progress is defined as a five percent annual reduction in ozone precursors or implementation of all feasible measures. All districts required to do these plans have used the all feasible measures option to show progress. The 1999 Bay Area Plan includes and thereby makes federally enforceable some but not all of the VOC measures in its most recent CCAA plan which also contains additional adopted NOx measures.

II. EVALUATION OF THE 1999 BAY AREA PLAN

This chapter reviews the contents of the 1999 Bay Area Plan and provides ARB staff's evaluation of each significant element.

A. EMISSION INVENTORIES AND CONFORMITY

Emissions inventories for the base year and the attainment year are fundamental elements of any air quality plan. The projected attainment year inventory must incorporate the effects of growth and existing controls to determine the expected emissions without further controls. emissions target for the attainment year. The future year inventory projections also allow calculation of the additional emission reductions needed to reach attainment by comparing those projections with emissions target for the attainment year. The attainment emissions target for each category of sources also establishes a "budget" for comparison in conformity analyses required by the Clean Air Act for new transportation plans and projects, and other federal actions or federally funded projects.

1. Overview of the 1995 Emission Inventory

U.S. EPA selected 1995 as the desired base year for the VOC and NOx emission inventory because this was the year in which the Bay Area had the highest and most numerous ozone violations. Total emissions in 1995 were 562 tpd of VOC and 626 tpd of NOx. Table II-1 shows that in the Bay Area about 40 percent of VOC emissions and 22 percent of NOx emissions are from stationary and area sources. Mobile sources account for over 60 percent of VOC emissions and about 78 percent of NOx emissions.

Table II-1
1995 ANNUAL EMISSION INVENTORY SUMMARY

	VOC (tpd)	Percent of Total VOC	NOx (tpd)	Percent of Total NOx
Stationary Sources	166	30	137	22
Area Sources	51	9	< 1	<1
Mobile Sources	345	61	489	78
Bay Area 1995 Emissions Inventory	***562***	***100***	***626***	***100***

Table II-2 shows a further breakdown of the emissions from mobile sources. On-road motor vehicles include passenger cars, minivans, sport utility vehicles, motorcycles, heavy-duty trucks, and buses. Off-road mobile sources include heavy-duty construction equipment, marine pleasurecraft, ships, aircraft, lawn and garden equipment, forklifts, pumps, and compressors.

Table II-2 1995 ANNUAL EMISSIONS INVENTORY MOBILE SOURCES*		
	VOC (tpd)	**NOx (tpd)**
On-Road Motor Vehicles	274	326
Off-Highway Mobile Sources	71	162
1995 Mobile Sources Emissions Total	***345***	***488***

*See Appendix B for further detail of the 1995 mobile source emission inventory.

Table II-3 summarizes the major categories of stationary and area source emissions for the Bay Area. The majority of the VOC emissions, 116 tpd, are from fuels distribution and solvent use. The next largest category of VOC emissions are a broad range of miscellaneous sources, including consumer products, pesticides, and fertilizer. The overwhelming majority of the NOx emissions, 124 tpd, are from fuel combustion.

Table II-3 1995 ANNUAL EMISSIONS INVENTORY STATIONARY AND AREA SOURCES*		
	VOC (tpd)	**NOx (tpd)**
INDUSTRIAL COMMERCIAL PROCESSES:		
Petroleum Refining Facilities	16.3	8.2
Chemical Manufacturing Facilities	3.1	2.2
Other Industrial Commercial Processes	15.8	1.4
PETROLEUM PRODUCTS/SOLVENT EVAPORATION:		
Petroleum Refinery	9.7	--
Fuels Distribution	29.3	--
Other Organic Compounds Evaporation (use of solvents)	86.8	--
COMBUSTION-STATIONARY SOURCES:		
Fuels Combustion	4.6	124.2
Burning of Waste Material	0.8	1.2
MISCELLANEOUS OTHER SOURCES (Consumer products, pesticides, and fertilizer):	50.9	0.2
1995 Stationary and Area Source Emissions Total:	***217.3***	***137.4***

*See Appendix A for further detail of the 1995 stationary and area source emission inventory.

We reviewed the emission inventory data that the Bay Area District compiled for 1995 and found that it is consistent with ARB's current emission inventory data.

2. 2000 Emissions Inventory

In addition to a base year inventory, attainment plans generally include an emissions inventory for the attainment year to show the projected emissions in the future year with existing controls. The attainment year inventory is also used to determine the quantity of new reductions needed. The District did not include a detailed 2000 emissions inventory in the Bay Area Plan because U.S. EPA did not require it. The attainment assessment is based on the 1995 emissions inventory grown to the year 2000. The Bay Area provided a copy of the complete inventory that underlies the attainment assessment for our evaluation. We include the detailed 2000 emissions inventory as Appendix C to this Staff Report for informational purposes since U.S. EPA did not require its submittal as part of this SIP revision.

3. Transportation Conformity and Motor Vehicle Emission Budgets

Under Section 176(c) of the federal Clean Air Act, federal funds and decisions may not support activities that contribute to violations of the national ambient air quality standards. The Act established a process, known as conformity, for assuring that federal decisions are consistent with the SIP. Transportation plans, transportation improvement programs, and transportation projects that involve federal funds must be shown to result in emissions that do not exceed estimates for motor vehicles in the SIP's progress and attainment demonstrations. This ceiling is established for on-road motor vehicles only and called the emissions budget.

The applicable transportation conformity emissions budgets for ozone (VOC and NOx) were established in the Bay Area's 1994 Ozone Maintenance Plan, based on 1990 emission levels. The 1999 Bay Area Plan relies on significantly lower emissions from on-road motor vehicles in the 2000 attainment assessment, resulting in a need to revise the old budgets. The projected reductions are due to changes in the emissions models and from implementation of additional controls.

While U.S. EPA did not list a revised transportation conformity budget in the 1998 *Federal Register* notice as a required element of the SIP revision, it subsequently notified the Bay Area District that a new budget was necessary. The emissions budget must be derived from the 1995 emissions inventory, after accounting for the effects of growth and control. The new budget for transportation conformity will be 175 tpd VOC and 247 tpd NOx, as shown below.

VOC budget (175.2 tpd) = 1995 on-road motor vehicle emissions (273.7 tpd) – changes to on-road motor vehicle emission categories between 1995-2000 (98.5 tpd)

NOx budget (247.1 tpd) = 1995 on-road motor vehicle emissions (326.3tpd) – changes to on-road motor vehicle emission categories between 1995-2000 (79.2 tpd)

Table II-4 shows that the new NOx budget is only slighter lower than the current NOx budget. The new VOC budget is significantly lower, but it is not likely to constrain future transportation projects because on-road motor vehicle emissions in the Bay Area are projected to decline for the foreseeable future.

Table II-4 MOTOR VEHICLE EMISSIONS BUDGETS FOR OZONE IN THE BAY AREA		
	On-Road Motor Vehicle Emissions (tpd)	
	VOC	**Nox**
1994 Maintenance Plan (emissions in 1990)	300	251
1999 Bay Area Plan (emissions in 2000)	175	247

The new transportation conformity budgets will become applicable when U.S. EPA makes a finding of adequacy. U.S. EPA will formalize new procedures for determining the adequacy of motor vehicle emissions budgets in response to a U.S. Court of Appeals decision in March 1999. Under these procedures, U.S. EPA will post notice of SIP submittals on its website. Within 90 days of receipt of the submittal, U.S. EPA will make a determination on the adequacy of the newly submitted budgets and post that determination on the same website. U.S. EPA staff stated that the "methodology used to derive" the emission budget as described in the Bay Area Plan is adequate to meet these requirements (6/3/99 letter from Deborah Jordan, U.S. EPA to Steve Heminger, MTC).

4. General Conformity

Section 176(c) of the federal Clean Air Act also prohibits all non-highway related federal actions from contributing to violations of the national ambient air quality standards. This requirement, known as "general conformity," applies to federal actions and federally funded projects, such as airport expansions. Under general conformity, the federal agency proposing the applicable action must:

- estimate all emissions resulting from that action,
- compare the emissions that would occur with the action to those that would occur without the federal action, and
- make a determination whether the resulting emissions "conform" to the SIP.

If there is a net increase in emissions due to the action, the federal agency must find that the increase is below de minimis levels, consistent with the emissions projections in the applicable SIP, or fully offset by enforceable measures.

As with transportation conformity budgets, U.S. EPA has indicated that the derived 2000 emissions inventory can be used for general conformity purposes. Because it recognizes the lack of specificity in the 2000 inventory, U.S. EPA indicated that it is preferable for future actions to show conformity either by keeping emission increases below the de minimis thresholds or by fully offsetting emissions increases (6/3/99 letter from David Howekamp, U.S. EPA to Ellen Garvey, Bay Area District).

B. ATTAINMENT ASSESSMENT

Federal planning requirements usually dictate the use of an air quality model to demonstrate attainment of a standard throughout a nonattainment area, based on the emissions and control strategy identified in the SIP. U.S. EPA established a new approach for the Bay Area Plan, requiring an attainment "assessment" rather than the usual modeled attainment "demonstration."

1. Attainment Assessment Requirements

U.S. EPA's *Federal Register* notice requires that the Bay Area Plan include an attainment assessment using available air quality data and technical analyses to estimate the amount of emission reductions needed. The attainment assessment was also to include meteorological conditions and ambient air pollution concentrations associated with the exceedances of the ozone standard in 1995 and 1996.

2. Attainment Assessment Approach

The Bay Area District staff considered numerous options and held several public workshops to solicit comment on the best approach to use for the attainment assessment. The Bay Area District chose an approach that bases the attainment assessment on the available photochemical modeling work and other technical analyses.

The Bay Area Plan's attainment assessment includes: (1) an analysis of the magnitude of the ozone problem in the Bay Area; (2) an examination of recent trends in ambient levels of ozone and its precursors, emission trends, spatial and temporal variations, and source-receptor relationships; and (3) the identification and application of analytical methods that can be used to predict future changes in ambient ozone resulting from changes in precursor emissions. The Bay Area District staff used Livermore peak ozone concentrations based on modeling of a September 1989 ozone episode.

To determine the amount by which the Bay Area peak ozone concentrations exceeded the standard of 124 parts per billion (ppb), the Bay Area Plan compares ozone levels to the standard at Livermore, which is the Bay Area site with the highest ozone concentrations. The design value (the fourth highest daily peak-hour ozone concentration in a three year period) for Livermore in 1995 was 138 ppb, about 10 percent above the level of the national ozone standard. Based on the 1995 design value for Livermore site and projected NOx emission reductions for 1995 to 2000 of 92 tpd, the District staff determined the VOC reductions needed to bring the Livermore design value to 124 ppb.

3. Attainment Assessment Results

Based on the 1989 modeling, the District staff estimated that 128 tpd of VOC reductions and no additional NOx reductions would be needed between 1995 and 2000 to meet the standard. Existing control measures adopted and being implemented by the District and ARB are projected to reduce VOC emissions by approximately 117 tpd between 1995 and 2000. The projected emissions also reflect new VOC reductions of 13.5 tpd that the District commits to achieve through permitting and enforcement actions to increase the effectiveness of refueling controls at service stations. Table II-5 shows that since the VOC reduction target is 128 tpd, an additional 11 tpd of VOC reductions are needed to attain the standard.

Table II-5
ESTIMATED REDUCTIONS NEEDED FOR ATTAINMENT IN THE BAY AREA (TPD)

Pollutant	1995 Emissions	Estimated 2000 Emission Inventory	Emission Reductions Needed	2000 Emission Inventory with Current SIP Control Measures	Additional Emissions Needed for Attainment
VOC	562	434	128	117	11
NOx	626	534	92	92	0

We believe the Bay Area District has met the streamlined requirements established by U.S. EPA in the July 10, 1998 *Federal Register* notice for the attainment assessment.

4. Violations in 1998

Weather in the Bay Area has a strong influence on air quality, as evidenced by the numerous violations of the standard in 1998. For areas close to the ozone standard, weather variations can make the difference between meeting and exceeding the standard in a particular year, despite steadily declining emissions. The violations in 1998 are troublesome, since the majority of the emission reductions projected to result in attainment had already been achieved. These violations emphasize the need to continue reducing emissions in the Bay Area until the standard can be attained under all weather conditions. The District's commitments in the Bay Area Plan for additional emission reductions (6.6 tpd VOC from new measures and 13.5 tpd VOC from increased enforcement at service stations) will continue progress toward this goal.

While there is technical uncertainty as to the specific reductions needed, we believe the strategies in the Bay Area Plan are a reasonable approach, given the twelve-month timeframe to develop and implement measures and the lack of an up-to-date modeling analysis. However, new local, state, and federal measures need to be pursued to ensure maintenance of the federal one-hour ozone standard and attainment of the more health-protective state ozone and particulate standards -- not just in the Bay Area, but also in downwind communities affected by Bay Area pollution.

5. Weekend Effect

The Bay Area Plan discusses a phenomenon known as the "weekend effect" -- ozone level are decreasing on all days of the week, but weekend levels are not decreasing as fast as weekday levels. The District concludes that the Bay Area ozone levels are limited by the amount of VOC emissions. ARB's analysis also shows the existence of a weekend effect. Although there may be lower NOx emissions from heavy-duty trucks on the weekend and higher VOC emissions due to increased use of sources such as lawnmowers, marine pleasurecraft, and barbecues, there are some hypotheses for the weekend effect which do not imply that ozone formation is VOC-limited. These hypotheses are: (1) there are changes on weekends, not only in the balance of VOC and NOx emissions, but also in the specific sources, the reactivity, the location, and the timing of emissions; and/or (2) VOC and NOx emissions may carried over from heavy nighttime traffic on Friday and Saturday nights and remain the next day to form ozone. ARB is continuing to conduct and fund studies in cooperation with the air districts and industry to quantify and better understand the causes of the "weekend effect."

C. CONTROL STRATEGY EVALUATION

The Bay Area Plan includes a control strategy to attain the national one-hour ozone standard based on both existing regulations and enforceable commitments to adopt and implement new control measures by specified dates. These rules and measures must be sufficient to achieve the emission reduction target by November 15, 2000. The Bay Area District has lead responsibility for adopting and implementing stationary and area source controls; MTC for transportation control measures; ARB for mobile sources, fuels, and consumer products; the State Bureau of Automotive Repair for vehicle inspection and maintenance; and U.S. EPA for national transportation sources.

1. Adopted Stationary Source Control Measures

Table II-6 shows the Bay Area stationary and area source rules that have already been adopted and submitted to the U.S. EPA as a SIP revision. These rules will achieve significant emission reductions between 1995 and 2000, 23 tpd of VOC and 30 tpd of NOx. These benefits are part of the baseline reductions cited in the attainment assessment.

Table II-6 DISTRICT MEASURES SUBMITTED INTO THE SIP		
Source Category	**VOC Reductions (tpd 1995-2000)**	**NOx Reductions (tpd 1995-2000)**
Miscellaneous Operations	0.3	--
Gasoline Dispensing Facilities	13.5	--
Metal Container, Closure and Coil Coating	0.6	--
Light and Medium Duty Motor Vehicle Assembly Plants	0.6	--
Valves and Flanges at Petroleum Refinery and Chemical Plants	0.7	--
Surface Coating of Misc. Metal Parts and Products	0.3	--
Graphic Arts Printing and Coating Operations	1.5	--
Pump and Compressor Seals at Petroleum Refinery and Chemical Plants	0.2	--
Semiconductor Manufacturing Operations	0.1	--
Wood Furniture and Cabinet Coatings	0.1	--
Solid Waste Disposal Sites	0.3	--
Aeration of Contaminated Soil and Removal of Underground Storage Tanks	1.0	--
Marine Vessel Loading Terminals	0.3	--
Adhesive and Sealant Products	2.5	--
Consumer Products	0.9	--
Industrial/Institutional/Commercial Boilers and Heaters	--	20.0
Stationary Internal Combustion Engines	--	4.4
Stationary Gas Turbines	--	4.9
Glass Melting Furnaces	--	0.4
TOTAL	***22.9***	***29.7***

In the Bay Area Plan, the District proposes ten additional stationary and area source control measures for inclusion in the SIP. Five of these have been adopted, but not yet submitted to U.S. EPA. Table II-7 shows these rules, which will reduce VOC emissions by 4.6 tpd.

The control measure in Table II-7 with the largest estimated emission reductions is SS-04, which requires the use of low VOC solvent cleaners. However, Measure SS-04 exempts one mineral spirits cold solvent cleaner per facility and solvent cleaners that have Bay Area District permits. ARB staff believes this rule could be made more stringent to further control VOC emissions from solvent cleaning operations by removing the current exemptions. These changes would make the Bay Area rule similar to the South Coast Air Quality Management District's current rule. Because the Bay Area District is in the process of implementing 1998 amendments to its solvent cleaning rule, we believe it will need more time to develop further revisions. We expect the District to update this rule in future plans for both state and federal purposes.

Table II-7 ADOPTED DISTRICT MEASURES NOT YET SUBMITTED INTO THE SIP					
SIP #	**Source Category**	**Adoption Date**	**Implementation Date**	**VOC Reduction (tpd 1995-2000)**	**NOx Reduction (tpd 1995-2000)**
SS-01	Can and Coil Coating	11/97	1/1/98, 1/1/2000	0.35	--
SS-02	Equipment Leaks at Refineries and Chemical Plants	1/7/98	1/7/98	1.20	--
SS-03	Pressure Relief Devices	12/17/97, 3/18/98	7/1/98	0.13	--
SS-04	Solvent Cleaning	9/16/98	9/1/99	2.10	--
SS-05	Graphic Arts Operations	3/2/99	7/1/99, 1/1/2000	0.8	--
Total Emission Reductions:				***4.58***	**--**

2. Proposed Stationary Source Control Measures

As shown in Table II-8, the proposed measures that are not yet adopted will control VOC emissions from polystyrene manufacturing, refinery floating roof tanks, gasoline dispensing facilities and landfills, and contaminated soil aeration. The District estimates that these five control measures will reduce VOC emission by 6.6 tpd. Most of the emission reductions from these proposed control measures will come from the control of gasoline dispensing facilities and contaminated soil aeration.

Table II-8 PROPOSED DISTRICT CONTROL MEASURES				
SIP #	**Source Category**	**Adoption Date**	**Implementation Date**	**VOC Reduction (tpd 1995-2000)**
SS-06	Polystyrene Manufacturing	1999	6/2000	0.26
SS-07	Low Emitting Retrofits for Slotted Guide Poles, Organic Liquid Storage	1999	6/2000	0.48
SS-08	Gasoline Dispensing Facilities	1999	6/2000	3.20
SS-09 & SS-10	Landfills & Contaminated Soil Aeration	1999	6/2000	2.68
Total Emission Reductions				***6.62***

Control measure SS-06, Polystyrene, Polypropylene and Polyethylene Foam Product Manufacturing, will require control of VOC emissions from specific point sources in foam product manufacturing operations. Emissions may be controlled by abatement equipment or reduction in the VOC concentration of the blowing agent. Control measure SS-07, Low Emitting Retrofits for Slotted Guide Poles, Organic Liquid Storage, will require retrofit of slotted guidepoles in large, floating roof organic liquid storage tanks equivalent to New Source Performance Standards (NSPS). Floating roof tanks are used to control emissions of organic liquids in large storage tanks typically found in refineries and bulk plants.

Control Measure SS-08, Emission Reductions from Gasoline Dispensing Facilities, will require equipment modifications to improve the efficiency of existing vapor recovery equipment. The measure would require that only vapor recovery systems compatible with federal Onboard Refueling Vapor Recovery requirements for new cars be used. The measure would set performance requirements for vapor recovery systems. It would also require pressure-vacuum valves on otherwise exempt tanks and would eliminate the Phase I vapor recovery exemption for low throughput tanks.

Control Measure SS-09, Prohibition of Contaminated Soil as Alternate Cover at Landfills, would prohibit the use of VOC-containing soil or industrial sludge as cover at landfills. It would also require treatment of VOC-contaminated soil either at the landfill or at offsite facilities. Control Measure SS-10, Prohibition of Contaminated Soil Aeration, would prohibit aeration of VOC-containing soils and require controlled treatment of contaminated soils and industrial waste sludges.

We reviewed the proposed stationary and area source control measures in the Bay Area Plan and relayed minor comments to District staff. These comments have been addressed in the proposed final Plan. Overall, we find that the proposed control measures in the Bay Area Plan and the control measures that have been adopted but not yet submitted into the SIP will result in the needed VOC emission reductions of 11 tpd.

3. Mobile Source Control Measures

The majority of emission reductions in the Bay Area anticipated to occur between 1995 and 2000 will result from ARB's mobile source control program. As shown in Table II-9, already adopted ARB control measures will result in 107 tpd VOC reductions and 90 tpd NOx reductions in the Bay Area during this period. The program include measures for passenger vehicles, heavy-duty trucks, off-road mobile sources, and cleaner-burning gasoline. New national emissions standards for recreational boats will also provide small VOC reductions in the Bay Area by 2000.

Table II-9 MOBILE SOURCE MEASURES ALREADY REFLECTED IN SIP		
Measure (Implementing Agency)	**VOC Reductions (tpd 1995-2000)**	**NOx Reductions (tpd 1995-2000)**
On-Road Motor Vehicles – Light and Medium Duty Cars and Trucks (ARB)	94.3	66.5
On-Road Motor Vehicles – Heavy Duty Trucks (ARB)	4.2	12.7
Off-Road Vehicles and Equipment (ARB)	8.6	10.6
Gasoline-Powered Recreational Boats – Exhaust Emission Standards (U.S. EPA)	0.7	--
Total Emission Reductions:	***107.8***	***89.8***

ARB control measures for light- and medium-duty cars and trucks include the Low Emission Vehicle (LEV) program, on-board diagnostics, and cleaner burning gasoline. Heavy duty diesel truck-related measures include clean diesel fuel, lower NOx standards for trucks and buses, and the smoke inspection program. For off-road mobile sources, ARB measures include standards for diesel equipment, as well as lawn and garden equipment. New measures to reduce emissions from mobile sources will continue to come on line in the future, for example the LEV II program, a 50 percent cut in NOx emissions from new truck and buses, increasingly tighter off-road equipment standards, motorcycle regulations, and marine pleasure craft regulations, and ensure that mobile source emissions will continue to decline in the future.

The Bay Area Plan also contains one mobile source measure not already reflected in the SIP, MS-01 – Electric Golf Carts. The measure for electric golf carts was adopted by the ARB in January 1994 and required that all new golf carts purchased in federal nonattainment areas be electric beginning in 1997. Because the Bay Area was designated as attainment at that time, the measure was not implemented there. However, after the Bay Area was redesignated, ARB staff notified all Bay Area golf courses of the requirement that all new golf carts acquired on or after March 1, 2000 must be electric. Because of the short implementation period – March to November 2000, this control measure will only reduce VOCs by 0.1 tpd. However, reductions will increase in future years as the golf cart fleet turns over.

4. Transportation Control Measures

The Bay Area Plan also contains transportation control measures (TCMs) aimed at reducing motor vehicle use or activity. The TCMs are MTC's contribution to the Plan. While there has been tremendous success in reducing emissions through exhaust, evaporation, and fuel technology improvements, transportation emissions continue to be a significant cause of air pollution. This is primarily due to continuing increases in the number of vehicles and vehicle miles traveled. Although minimal emission reductions are expected from TCMs in the short term, the benefits of these measures are often realized years after adoption. Therefore, TCMs are an integral part of any plan for achieving and maintaining air quality standards.

Twenty-eight TCMs were included in the Bay Area's 1994 maintenance plan and are almost complete. Under section 110 (l) of the FCAA, control measures adopted or required prior to 1990 must remain in effect unless they are replaced with equivalent measures. The Bay Area Plan proposes to withdraw four TCMs from the Ozone SIP because they are either permanent (e.g., Guadalupe light rail line and BART Colma station) or reduce only carbon monoxide emissions. Table II-10 lists the four measures to be deleted: FTCM 6, FTCM 11, FTCM 12, and FTCM 16. The TCMs remaining in the SIP are shown in Appendix D.

Table II-10
TRANSPORTATION CONTROL MEASURES PROPOSED FOR DELETION FROM THE SIP

TCM Id#	Control Measure Description	Reason for Deletion
FTCM 6	Continue efforts to obtain funding to support long range transit improvements	Specifically for efforts to obtain funding for construction of the Guadalupe light rail line in Santa Clara County and design work for the North Concord BART and Warm Springs extensions. These activities have been completed, and the Guadalupe light rail line is permanent.
FTCM 11	Gasoline Conservation Awareness Program	Carbon monoxide control strategy.
FTCM 12	Santa Clara Commuter Transportation Program	Carbon monoxide control strategy.
FTCM 16	Implement MTC Resolution 1876, Revised – New Rail Starts Agreement (BART Colma extension only)	BART Colma extension is complete and permanent.

5. Voluntary Control Measures

As noted above, transportation related emissions continue to be a major source of air pollution despite increasingly stringent vehicle emission standards. Many areas are exploring alternative approaches for reducing mobile source emissions, including voluntary strategies to reduce local transportation activity levels or change the in-use vehicle and engine fleet composition. Table II-11 shows the two voluntary control measures proposed in the Bay Area Plan for inclusion in the SIP: the District's "Spare the Air" program and a voluntary control measure for low-emission alternatively-fueled vehicles and infrastructure. The Bay Area Plan claims no emission reductions from these measures because of concerns about a U.S. EPA guidance policy that calls for regulatory "backstops" if voluntary measures are used for SIP credit. The District plans to document the program's effectiveness by monitoring participation in the Spare the Air program through surveys.

Table II-11 PROPOSED VOLUNTARY CONTROL MEASURES				
SIP #	**Control Measure**	**Source Categories Affected**	**Implementation Date**	**VOC/NOx Reductions (1995-2000)**
VM-01	Spare the Air Program	Cars, pickups, lawn and garden equipment, consumer products	6/1999 – 10/1999; 6/2000 – 10/2000	No SIP Credit at this time
VM-02	Low Emission Alternatively Fueled Vehicles and Infrastructure	On-road motor vehicles	1999, 2000, 20001, (depends on funding)	No SIP Credit at this time

The Spare the Air program is implemented during the "ozone season" from the beginning of June until the end of October. The program relies on public education through a comprehensive outreach effort on actions individuals can take to improve air quality on high pollution days. These actions include reducing: motor vehicle trips, use of consumer products, and use of lawn and garden equipment.

The Low Emission Alternatively Fueled Vehicles and Infrastructure program is intended to facilitate and accelerate projects that replace older, more polluting vehicles with cleaner, alternative fuel vehicles. A critical element of this program is funding for the development of an infrastructure to support alternative fuels, such as CNG re-fueling and electric vehicle charging stations. Funding sources include the Congestion Mitigation and Air Quality Improvement Program, the Transportation Fund for Clean Air, the Carl Moyer Program, California Energy Commission grants, U.S. Department of Energy grants, and the private sector. The Bay Area District believes that air quality benefits can be expected over time as a result of this program.

6. Other Planned Commitments

Currently, some types and models of vapor recovery equipment are not working as envisioned, resulting in excess VOC emissions from gasoline service stations. As shown in Table II-6, District Control Measures Already Submitted into the SIP, the baseline emissions reflect VOC reductions of 13.5 tpd that the District commits to achieve through permitting and enforcement actions to increase the effectiveness of refueling controls at service stations. The District estimates that in 1995 there were approximately 15 tpd of excess VOC emissions from vapor recovery systems in the Bay Area. These excess emissions are caused by six different phenomena: (1) spit-back spillage, (2) pseudo-spillage, (3) low air to liquid ratios, (4) pressure-related fugitives, (5) idle-tip emissions, and (6) "whoosh" emissions.

Spit-back spillage, which occurs only with bootless nozzle designs, is the forcible ejection of gasoline when the nozzle shutoff mechanism activates at the end of refueling.
Pseudo-spillage is the evaporation of gasoline left on the atmosphere side of check valves.
Low air-to-liquid (A/L) ratios occur when a vapor recovery system is not pulling in as much vapor volume as the gasoline volume being dispensed, thereby allowing gasoline vapor to escape to the atmosphere.
Pressure-related fugitive emissions are caused by low A/L ratios that result in ingestion of air into underground storage tanks, which evaporates more gasoline and raises the storage tank headspace pressure.
Idle-tip emissions, which occurred with the Emco Wheaton 4000 series nozzles, are due to releases of gasoline left in the hose beyond the check valve after fueling.
"Whoosh" emissions are released when the gas cap on a vehicle is removed for refueling.

Excess emissions from spit-back spillage have been reduced due to federal regulations that now require the throughput to be less than 10 gallons per minute. The Bay Area District has committed to take necessary permitting and enforcement actions and to reduce the majority of the excess emissions from pseudo-spillage, low air to liquid ratios, idle-tip emissions, and pressure-related fugitives. "Whoosh" emissions are not likely to be controlled by the year 2000 because control is dependent on fleet turnover to vehicles equipped with onboard refueling vapor recovery systems.

We believe it is possible for the Bay Area District to fulfill the commitment to reduce the excess vapor recovery emissions and commend the District for committing the resources to this ambitious program. This effort will complement ARB's current regulatory development to improve the vapor recovery program statewide. The focus of ARB's activities is to ensure that the devices achieve the required efficiencies and to support program enhancements for additional benefits. We expect to propose new regulations at the end of the year, but implementation would not yield benefits in time for the 2000 attainment date.

D. CONTINGENCY MEASURES

As required by the Clean Air Act, the Bay Area Plan includes contingency measures that would go into effect if the area continues to violate the standard. The District included as contingency measures only adopted rules and regulations that will be implemented without further action.

Table II-12 outlines the 14 contingency measures in the Bay Area Plan and the estimated emission reductions for the post-attainment years up to 2003. Six contingency measures are District measures, one is U.S. EPA's emission standards for gasoline-powered recreational boats, and the other seven are ARB regulations. Another ARB measure in development for Board consideration in late 1999 may provide additional benefits in this timeframe by reducing gas can spillage.

Table II-12 PROPOSED CONTINGENCY MEASURES						
Source Category	**Emission Reductions (tpd)**					
	VOC (2000-2001)	**VOC (2000-2002)**	**VOC (2000-2003)**	**NOx (2000-2001)**	**NOx (2000-2002)**	**NOx (2000-2003)**
Adopted measures already in the SIP:						
Gasoline Dispensing Facilities (Rule 8-7)	0.5	0.9	1.1	--	--	--
Graphic Arts Printing and Coating Operations (Rule 8-20)	0.8	0.7	0.7	--	--	--
Aeration of Contaminated Soil and Removal of Underground Storage Tanks (Rule 8-40)	0.5	1.0	1.5	--	--	--
On Road Motor Vehicles – Light and Med. Duty Cars and Trucks (ARB)	14.4	26.8	39.1	16.8	26.4	35.3
On Road Motor Vechicles – Heavy Duty Trucks (ARB)	0.1	0.5	0.7	3.3	5.0	6.7
Off Road Vehicles (ARB)	0.1	0.1	0.2	3.8	7.8	9.5
Gasoline-powered Recreational Boats (U.S. EPA)	0.7	1.6	3.6	(0.1)	(0.1)	(0.2)
Stationary Internal Combustion Engines (Rule 9-8)	--	--	--	1.0	1.0	0.9
Stationary Gas Turbines (Rule 9-9)	--	--	--	0.9	0.9	0.8
Glass Melting Furnaces (Rule 9-12)	--	--	--	0.2	0.2	0.1
Adopted Measures not yet incorporated into the SIP for the Bay Area:						
Consumer Products Mid-term Measures – Part 1 (ARB)	0.6	1.8	2.6	--	--	--
Marine Pleasure Craft (ARB)	0.3	0.7	1.6	0.0	(0.1)	(0.2)
Electric Golf Carts (ARB)	0.1	0.2	0.3	--	--	--
Off Road Spark Ignition Engines (ARB)	0.0	0.2	0.4	0.2	0.9	2.0
Total Emission Reductions:	***18.1***	***34.5***	***51.8***	***26.1***	***42.0***	***54.9***

Most of the contingency measures are adopted and have already been submitted into the SIP. Four of the contingency measures that are adopted but have not received SIP credit for the Bay Area are Consumer Products Mid-term Measures – Part 1, Emission Reductions from Marine Pleasure Craft, Electric Golf Carts, and Off-Road Spark Ignition Engine Controls. All of these will be implemented by the ARB.

The Consumer Products Mid-term Measures – Part 1, adopted in July 1997, sets limits on the VOC content of a number of consumer products, including automotive polishing compounds, carpet and upholstery cleaners, degreasers, heavy-duty hand cleaners, metal cleansers, lubricants, herbicides, paint strippers, and spot removers. The standards will become effective on dates ranging from January 1, 2001 to January 1, 2005. The cumulative VOC emission reductions expected in the Bay Area as a result of this regulation is 0.6 tpd in 2001, 1.8 tpd in 2002, and 2.6 tpd in 2003.

The Marine Pleasurecraft regulation, adopted by the ARB in December 1998, consists of new emission standards for gasoline-powered marine engines, including outboard motors and personal watercraft. The standards apply to new marine engines manufactured starting with the 2001 model year. Under the regulation, a typical marine engine will be 75 percent cleaner by 2001 and 90 percent cleaner by 2008. This regulation is expected to reduce VOCs by 1.6 tpd in 2003 in the Bay Area. A small increase in NOx emissions of 0.2 tpd is also expected.

Reductions of VOC emissions from ARB's Electric Golf Carts regulation will increase in future years as the golf cart fleet turns over.

The Off-Road Spark Ignition Engine Controls regulation contains emission standards for engines 25 horsepower or above. The standards apply to equipment such as forklifts, portable generators, large turf care equipment, scrubbers/sweepers, airport ground support equipment, and general industrial equipment. Construction and farm equipment engines below 175 horsepower, marine propulsion engines, locomotives, and recreational vehicles are excluded. Implementation of the rule begins in 2001 for engines with a displacement greater than 1.0 liter, and 2002 for engines 1.0 liter and below. Emission reductions as a result of this rule are 0.36 tpd of VOCs and 1.95 tpd of NOx.

We reviewed the contingency measures in the Bay Area Plan and relayed minor comments related to the estimates of emission reductions and the cost effectiveness of the measures to District staff. These comments have been addressed in the proposed final Plan. ARB staff believes that the proposed contingency measures will result in the estimated emission reductions

III. ENVIRONMENTAL IMPACTS

The California Environmental Quality Act (CEQA) requires that state and local agency projects be assessed for potential significant environmental impacts. Air quality plans are "projects" that are subject to CEQA requirements. For the Bay Area Plan, the District prepared a Negative Declaration (ND) that includes a CEQA Initial Study. The ND references the environmental impact report (EIR) for the Bay Area 1991 Clean Air Plan and the subsequent EIR Addenda for the 1994 and 1997 Clean Air Plans. The ND determined that the Bay Area Plan will not have a significant impact on the environment.

The ND discusses the adopted measures, the proposed measures, and the contingency measures. The potential environmental impacts of the adopted measures were analyzed adequately in the 1991 EIR, the 1994 and 1997 EIR Addenda, and within the rule development staff reports for the measures. Similarly, the potential impacts of measures such as the Spare the Air Program that were implemented without a rulemaking were analyzed adequately in the 1991 EIR and 1994 and 1997 EIR Addenda. The contingency measures in the Bay Area Plan are all ARB measures that were analyzed adequately for environmental impacts in the respective ARB staff reports. Therefore, the adopted and already implemented measures and contingency measures are considered as part of the existing setting, and their impact is not further analyzed. The project analyzed in the ND thus is limited to the implementation of the proposed measures.

Five control measures are analyzed for environmental impacts in the ND: SS-06, Polystyrene, Polypropylene, and Polyethylene Foam Product Manufacturing; SS-07, Low Emitting Retrofits for Slotted Guide Poles, Organic Liquid Storage; SS-08, Emission Reductions from Gasoline Dispensing Facilities; SS-09, Prohibition of Contaminated Soil as Alternate Daily Cover at Landfills; and SS-10, Prohibition of Contaminated Soil Aeration. SS-06 was evaluated for potential environmental impacts in the 1994 EIR Addendum and a proposed Negative Declaration prepared during the rule development process. The potential environmental impacts for SS-07 and SS-08 were evaluated in the 1997 EIR.

The CEQA Initial Study evaluates the potential impacts of SS-06, SS-07, SS-08, SS-09, and SS-10 on air quality, water quality, biological resources, and other measures of environmental quality. Because SS-06, SS-07, SS-09, and SS-10 will require the use of abatement equipment to control VOC emissions at affected facilities, they are expected to have minor negative impacts on the environment. For example, the measures could require use of carbon adsorption, which could result in small amounts of wastewater requiring treatment. The measures could also require the use of afterburners to incinerate VOC. Afterburners emit NOx, carbon monoxide, and other combustion products. In the ND, Bay Area District staff state that these increased emissions of other pollutants are expected to be insignificant because afterburners require permits from the Bay Area District, which require any afterburner to include Best Available Control Technology to minimize combustion emissions. In general, the negative impacts are expected to be negligible and outweighed by the benefits of the measures. These control measures will reduce VOC emissions, thereby contributing to reduction of ozone levels in the Bay Area. Toxic air contaminants are also expected to be reduced as a side benefit.

In the ND, Bay Area District staff states that the Bay Area Plan will improve the quality of the environment in the Bay Area by reducing air pollutant emissions. Modifications at the facilities resulting from implementations of the control measures will not have a significant impact to the environment.

We reviewed the ND prepared by the District for the Bay Area Plan, and find that it accurately describes the potential environmental impacts of the plan. Staff concurs with the Bay Area District's conclusions, and finds that the Bay Area District has met its obligations under CEQA.

IV. LEGAL AUTHORITY

The Federal Clean Air Act Amendments of 1990 (the AAct≅ or ACAA≅; 42 U.S.C. section 7401 et seq.) require California to submit to the U. S. EPA revisions to the SIP for ozone and PM10 for certain areas. The primary tool to be used in the effort to attain national ambient air quality standards is a plan to be developed by any state with one or more nonattainment areas which provides for implementation, maintenance and enforcement of the standards --- the SIP (∋110(a)(1)). Section 110(a)(2)(A) broadly authorizes and directs states to include in their SIPs:

> "...enforceable emission limitations and other control measures, means, or techniques (including economic incentives such as fees, marketable permits, and auctions of emissions rights), as well as schedules and timetables for compliance, as may be necessary or appropriate to meet the applicable requirements of the Act."

Pursuant to these codes, ARB is charged with coordinating state, regional and local efforts to attain and maintain both state and national ambient air quality standards. The direct statutory link between ARB and the mandates of the CAA is found in ∋39602 of the Health and Safety Code. Pursuant to this section--

> "The state board is designated the air pollution control agency for all purposes set forth in federal law.
>
> The state board is designated as the state agency responsible for the preparation of the state implementation plan required by the Clean Air Act (42 U.S.C., Sec. 7401, et seq.) and, to this end, shall coordinate the activities of all districts necessary to comply with that act.
>
> Notwithstanding any other provision of this division, the state implementation plan shall only include those provisions necessary to meet the requirements of the Clean Air Act."

V. STAFF RECOMMENDATIONS

The ARB staff have reviewed and commented on the 1999 San Francisco Bay Area Ozone Attainment Plan. We are satisfied Bay Area Plan meets the minimum Clean Air Act requirements as outlined in the July 10, 1998 *Federal Register* notice and as interpreted by U.S. EPA in subsequent correspondence.

Staff recommends that the Board approve the Bay Area Plan as a SIP revision, specifically the 1995 emission inventory for VOC and NOx, the attainment assessment, the control strategy, the new transportation conformity budget, and the contingency measures. Staff is recommending further that the Board direct the Executive Officer to submit this SIP revision to U.S. EPA as soon as possible.

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APPENDIX A

1995 Annual Emissions Inventory Stationary and Area Source		
	VOC (tpd)	**NOx (tpd)**
INDUSTRIAL COMMERCIAL PROCESSES		
Petroleum Refining Facilities:		
Basic Refining Processes	0.10	6.42
Wastewater (Oil-Water) Separators	3.32	--
Wastewater Treatment Facilities	0.13	--
Cooling Towers	2.27	--
Flares and Blowdown Systems	0.11	1.73
Other Refining Processes	0.51	--
Fugitives	9.90	--
Subtotal	***16.3***	***8.2***
Chemical Manufacturing Facilities:		
Sulfur Manufacturing	0.03	0.06
Coatings and Inks Manufacturing	0.68	--
Resins Manufacturing	0.02	--
Other Chemical Manufacturing	0.73	2.18
Fugitives (all manufacturing) – Valves and Flanges		
Subtotal	***3.1***	***2.2***
Other Industrial Commercial Processes:		
Bakeries	1.33	--
Cooking	0.97	--
Wineries	0.64	--
Other Food and Agricultural Processes	0.54	--
Metallurgical	0.04	--
Asphalt Concrete Plants	0.05	0.04
Glass and Related Products Manufacturing	0.02	0.82
Stone, Sand, and Gravel	0.06	--
Oil Production Fields	0.06	--
Gas Production Fields	0.15	--
Waste Management	4.47	0.24
Semiconductor Manufacturing	0.86	--
Flexible and Rigid Discs Manufacturing	0.02	--
Fiberglass Products Manufacturing	0.49	--
Rubber Products Manufacturing	0.20	--
Plastic Products Manufacturing	0.68	0.03
Contaminated Soil Aeration	4.07	--
Soil Vapor Extraction and Air Stripping	0.29	--
Other Industrial Commercial	0.90	0.23
Subtotal	***15.8***	***1.4***
PETROLEUM PRODUCTS/SOLVENT EVAPORATION		
Petroleum Refinery:		
Storage Tanks	6.71	--
Loading Operations	2.94	--
Subtotal	***9.7***	***--***

1995 Annual Emissions Inventory Stationary and Area Source (cont.)		
	VOC (tpd)	**NOx (tpd)**
Fuels Distribution:		
Natural Gas Distribution	0.45	--
Bulk Plants (Gasoline Only)	0.82	--
Bulk Plants and Terminals (Non-Gasoline)	0.06	--
Loading Trucks	0.41	--
Trucking	0.17	--
Gasoline Filling Stations	23.40	--
Aircraft Fueling	2.71	--
Recreational Boat Fueling	0.87	--
Ferry and Fishing Boats Fueling	0.19	--
Other Fueling	0.19	--
Subtotal	***29.3***	***--***
Other Organic Compounds Evaporation:		
Industrial Degreasing	3.27	--
Commercial Degreasing	2.22	--
Dry Cleaners	0.14	--
Printing	8.25	--
Adhesives and Sealants	11.10	--
Structures Coating	25.40	--
Industrial/Commercial Coating	31.30	--
Storage Tanks	1.39	--
Lightering	0.08	--
Ballasting	1.67	--
Marine Vessel Cleaning and Gas Freeing	0.68	--
Sterilizers	--	--
Marine Loading (Non-Refinery)	0.19	--
Asphalt Paving	0.25	--
Other Organics Evaporation	0.90	--
Subtotal	***86.8***	***--***
COMBUSTION-STATIONARY SOURCES		
Fuels Combustion:		
Domestic	2.03	11.80
Cogeneration	0.78	11.50
Power Plants	0.06	12.90
Oil Refineries External Combustion	0.37	31.20
Glass Melting Furnaces – Natural Gas	--	4.61
Reciprocating Engines	0.30	8.78
Turbines	0.13	2.16
Other External Combustion	0.91	41.20
Subtotal	***4.6***	***124.2***

1995 Annual Emissions Inventory Stationary and Area Source (cont.)		
	VOC (tpd)	**NOx (tpd)**
Burning of Waste Material:		
Incineration	0.70	1.22
Planned Fires	0.09	0.01
Subtotal	***0.8***	***1.2***
MISCELLANEOUS OTHER SOURCES		
Construction Operations	--	--
Farming Operations	--	--
Entrained Road Dust	--	--
Accidental Fires	0.42	0.14
Animal Waste	3.75	--
Wind Blown Dust	--	--
Agricultural Pesticides	2.86	--
Non-Agricultural Pesticides	1.51	--
Consumer Products (no pesticides)	42.20	--
Other Miscellaneous Sources	0.18	0.07
Subtotal	***50.9***	***0.2***
Bay Area Stationary and Area Source Emissions Total	***217.3***	***137.4***

APPENDIX B

1995 Annual Emissions Inventory – Mobile Sources		
	VOC (tpd)	**NOx (tpd)**
COMBUSTION-MOBILE SOURCES		
Off-Highway Mobile Sources:		
Lawn, Garden, and Other Utility Equipment	13.30	0.61
Transportation Refrigeration Units	0.22	1.79
Farm Equipment	1.26	7.14
Heavy Duty Industrial/Construction Equipment	2.27	26.20
Light Duty Industrial/Construction Equipment	22.10	77.70
Locomotive Operations	0.50	11.00
Off-Road Motorcycles	2.16	0.16
All Terrain Vehicles	0.74	0.02
Four-wheel Drive Vehicles	0.11	0.08
Ships Maneuvering	0.11	3.12
Ships Berthing	0.28	1.65
Ships In-Transit	0.15	5.42
Commercial Boats	0.65	4.02
Recreational Boats	16.90	1.41
Subtotal	***60.7***	***140.3***
Aircraft:		
Commercial Aircraft	3.58	17.00
General Aviation	0.88	0.20
Military Aircraft	5.91	4.35
Agricultural Aircraft	--	--
Airport Ground Support Equipment	0.16	0.47
Subtotal	***10.5***	***22.0***
On-Road Motor Vehicles:		
Light Duty Passenger	176.30	149.00
Light Duty Trucks	74.40	86.60
Medium Duty Trucks	9.70	12.80
Light Heavy Duty Trucks	3.48	17.70
Medium Heavy Duty Trucks	2.92	15.20
Heavy Heavy Duty Trucks	4.35	38.80
Heavy Duty Buses	0.53	5.28
Motorcycles	2.01	0.93
Subtotal	***273.7***	***326.3***
Mobile Source Emissions Inventory Total	***344.9***	***488.6***

APPENDIX C

DRAFT 2000 Planning Inventory for the Bay Area

Source Category	VOC (tpd)	NOx (tpd)
INDUSTRIAL COMMERCIAL PROCESSES		
Petroleum Refining Facilities:		
Basic Refining Processes	0.10	6.49
Wastewater (Oil-Water) Separators	3.53	--
Wastewater Treatment Facilities	0.09	--
Cooling Towers	2.35	--
Flares and Blowdown Systems	0.08	1.36
Other Refining Processes	0.54	--
Fugitives	8.93	--
Subtotal	***15.6***	***7.9***
Chemical Manufacturing Facilities:		
Sulfur Manufacturing	0.03	0.07
Coatings and Inks Manufacturing	0.70	--
Resins Manufacturing	0.02	--
Other Chemicals Manufacturing	0.74	2.20
Fugitives (all manufacturing) – Valves and Flanges	1.70	--
Subtotal	***3.2***	***2.3***
Other Industrial Commercial Processes:		
Bakeries	1.30	--
Cooking	1.07	--
Wineries	0.88	--
Other Food and Agricultural Processes	0.26	--
Metallurgical	0.04	0.01
Asphalt Concrete Plants	0.03	0.03
Glass and Related Products Manufacturing	0.02	0.87
Stone, Sand and Gravel	0.04	--
Oil Production Fields	0.05	--
Gas Production Fields	0.19	--
Waste Management	4.22	0.25
Semiconductor Manufacturing	0.78	--
Flexible and Rigid Discs Manufacturing	0.02	--
Fiberglass Products Manufacturing	0.52	--
Rubber Products Manufacturing	0.22	--
Plastic Products Manufacturing	0.72	0.03
Contaminated Soil Aeration	3.06	--
Soil Vapor Extraction and Air Stripping	0.30	
Other Industrial Commercial	0.90	0.23
Subtotal	***14.6***	***1.4***
PETROLEUM PRODUCTS/SOLVENT EVAPORATION		
Petroleum Refinery:		
Storage Tanks	7.48	--
Loading Operations	2.74	--
Subtotal	***10.2***	***--***

DRAFT 2000 Planning Inventory for the Bay Area (cont.)

Source Category	VOC (tpd)	NOx (tpd)
Fuels Distribution:		
Natural Gas Distribution	0.45	--
Bulk Plants (Gasoline Only)	0.70	--
Bulk Plants and Terminals (Non-gasoline)	0.06	--
Loading Trucks	0.41	--
Trucking	0.15	--
Gasoline Filling Stations	9.80	--
Aircraft Fueling	2.82	--
Recreational Boat Fueling	0.93	--
Ferry and Fishing Boats Fueling	0.20	--
Other Fueling	0.20	--
Subtotal	***15.7***	***--***
Other Organic Compound Evaporation:		
Industrial Degreasing	3.33	--
Commercial Degreasing	2.26	--
Dry cleaners	0.15	--
Printing	6.75	--
Adhesives and Sealants	8.98	--
Structures Coating	26.00	--
Industrial/Commercial Coating	30.70	--
Storage Tanks	1.51	--
Lightering	0.09	--
Ballasting	1.85	--
Marine Vessel Cleaning and Gas Freeing	0.72	--
Sterilizers	--	--
Marine Loading (Non-refinery)	0.22	--
Asphalt Paving	0.33	--
Other Organics Evaporation	0.67	--
Subtotal	***83.6***	***--***
COMBUSTION-STATIONARY SOURCES		
Fuels Combustion:		
Domestic	2.10	12.00
Cogeneration	0.76	6.16
Power Plants	0.17	30.20
Oil Refineries External Combustion	0.40	32.90
Glass Melting Furnaces – Natural Gas	--	4.21
Reciprocating Engines	0.34	4.83
Turbines	0.14	2.37
Other External Combustion	1.18	21.80
Subtotal	***5.1***	***114.5***
Burning of Waste Material:		
Incineration	0.75	1.30
Planned Fires	0.10	0.01
Subtotal	***0.9***	***1.3***

DRAFT 2000 Planning Inventory for the Bay Area (cont.)

Source Category	VOC (tpd)	NOx (tpd)
COMBUSTION – MOBILE SOURCES		
Off-Highway Mobile Sources:		
Lawn, Garden, and Other Utility Equipment	6.57	1.29
Transportation Refrigeration Units	0.23	1.84
Farm Equipment	1.28	6.55
Heavy Duty Industrial/Construction Equipment	2.37	22.40
Light Duty Industrial/Construction Equipment	22.20	72.10
Locomotive Operations	0.48	10.60
Off-Road Motorcycles	1.18	0.12
All Terrain Vehicles	0.46	0.02
Four-Wheel Drive Vehicles	0.10	0.08
Ships Maneuvering	0.11	3.28
Ships Berthing	0.29	1.73
Ships In-Transit	0.15	5.70
Commercial Boats	0.69	4.33
Recreational Boats	16.40	1.71
Subtotal	***52.5***	***131.8***
Aircraft:		
Commercial Aircraft	3.16	15.00
General Aviation	0.91	0.21
Military Aircraft	6.06	4.55
Agricultural Aircraft	--	--
Airport Ground Support Equipment	0.17	0.49
Subtotal	***10.3***	***20.2***
On-Road Motor Vehicles:		
Light Duty Passenger	116.8	106.5
Light Duty Trucks	44.10	62.00
Medium Duty Trucks	7.98	13.20
Light Heavy Duty Trucks	2.09	14.40
Medium Heavy Duty Trucks	1.68	14.20
Heavy Heavy Duty Trucks	2.79	31.00
Heavy Duty Buses	0.52	4.82
Motorcycles	1.78	0.99
Subtotal	***177.7***	***247.1***
Further Reductions due to Reformulated Gasoline	2.5	--
Subtotal	***175.3***	
MISCELLANEOUS OTHER SOURCES		
Construction Operations	--	--
Farming Operations	--	--
Entrained Road Dust	--	--
Accidental Fires	0.41	0.13
Animal Waste	4.00	--
Wind Blown Dust	--	--
Agricultural Pesticides	2.95	--
Non-Agricultural Pesticides	1.53	--
Consumer Products (No pesticides)	41.70	--
Other Miscellaneous Sources	0.19	0.07
Subtotal	***50.8***	***0.2***
TOTAL	**438**	**527**
Banking Emissions:	7.56	7.69
GRAND TOTAL:	**445**	**534**

APPENDIX D

Transportation Control Measures Remaining in the SIP

TCMs REMAINING IN THE SIP	
TCM Id #	**Control Measure**
FTCM 1	Reaffirm commitment to 28% transit ridership increase between 1978 and 1983
FTCM 2	Support post-1983 improvements identified in transit operator's 5-year plans/Adopt ridership increase targets for 1983-1987
FTCM 3	Seek to expand and improve public transit beyond committed levels
FTCM 4	285 miles of HOV lanes. (Formerly FTCM 4 and FTCM 20)
FTCM 5	Support a regional ridematching service and encourage employers to participate in ridesharing activities
FTCM 7	Support the development of park and ride lots, serving carpools and transit
FTCM 8	Shared Use Park and Ride Lots
FTCM 9	Expand commute alternatives
FTCM 10	Information Program for Local Government
FTCM 13	Increase bridge tolls to $1.00 on all bridges
FTCM 14	Bay Bridge surcharge of $1.00
FTCM 15	Increase state gas tax by 9 cents
FTCM 17	Continue October 1989 Post-Earthquake Transit Services
FTCM 18	Sacramento – Bay Area Amtrak Service
FTCM 19	Upgrade Caltrain Peninsula Service
FTCM 20	Regional HOV System Plan
FTCM 21	Regional Transit Coordination
FTCM 22	Expand Regional Transit Connection Services
FTCM 23	Employer Audits
FTCM 24 & 25	Expand and maintain signals
FTCM 26	Incident management on Bay Area freeways
FTCM 27	Update MTC guidance on development of local Transportation Systems Management programs
FTCM 28	Local TSM initiatives