



**South Coast
AIR QUALITY MANAGEMENT DISTRICT**

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October 14, 1994

South Coast Air Quality
Management District Board

**Request that the Staff Prepare an
Implementation Schedule for AQMP Control Measures that
Directly Corresponds to Cost-Effectiveness Rankings and that
No Control Measures be Implemented Until All Costs Are Identified**

The Administrative Committee directed staff to report back to the Board regarding the implementation schedule for AQMP Control Measures. This report responds to the Committee's request.

The attached report identifies the legal requirements relative to the inclusion of all feasible control measures in the AQMP. The report provides a list of those measures that are quantified relative to their cost, and explains why other measures are not quantified at this time.

As reviewed in the attached report, the 1994 AQMP as adopted contains an implementation schedule which is primarily based on the cost-effectiveness ranking of the measures. Some measures, however, are scheduled to be implemented sooner or later than would occur strictly based on cost-effectiveness due to several considerations. They include the program development process for VOC RECLAIM; ARB's rulemaking schedule; and state and federal mandates. Other measures were scheduled based on the amount of reduction that could be achieved as compared to the resources that are needed to develop the rule. Also, available staff expertise was an important consideration for some limited number of measures for determining their schedule for development into rules.

Some measures, however, are as yet unquantified relative to their cost-effectiveness. These measures either lack information, or they are market-based programs, such as VOC RECLAIM. For the latter, staff estimated the cost of the command and control programs subsumed by the control measure. As experienced with the NO_x and SO_x RECLAIM program, market-based approaches often offer more cost effective solutions to traditional command and control measures. The implementation schedule for these measures, whose costs were not quantified, was established based on criteria set forth in

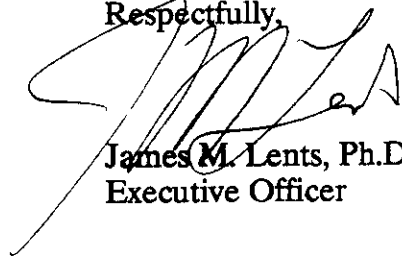
state law and include technological feasibility, emission reduction potential and public acceptability and others.

Finally, as described in the attached report, the staff undertakes an extensive socio-economic impact analysis as part of the rule development process for each control measure. The costs of the rule along with other socioeconomic parameters are provided to the Board for its consideration during adoption deliberations.

THEREFORE IT IS RECOMMENDED THAT YOUR BOARD

--Receive and file the report.

Respectfully,



James M. Lents, Ph.D.
Executive Officer

BRW:JPB:rsp
Attachments

INTRODUCTION

This report addresses issues raised by the Governing Board during the September 9, 1994 Adoption Hearing for the 1994 Air Quality Management Plan (AQMP) Revision, relative to the cost effectiveness and implementation schedule of the AQMP control measures. The report defines the legal framework for the development and inclusion of control measures in the AQMP; identifies the cost effectiveness information provided in the AQMP and the implementation schedule adopted by the Governing Board; and finally, addresses steps staff undertakes in developing control measures into rules, relative to rule compliance costs and socioeconomic impacts. These steps ensure that the Governing Board and the public will be provided the opportunity to review and consider each rule's costs prior to its adoption and implementation.

LEGAL FRAMEWORK

Federal Clean Air Act

The federal Clean Air Act (CAA) requires plans to provide for the implementation of all reasonably available control measures "as expeditiously as practicable." The CAA also requires plans to include standards for reasonable further progress, which is defined as annual incremental reductions in emissions of relevant air pollutants needed to ensure attainment of the National Ambient Air Quality Standards (NAAQS) by the applicable date.

Section 110(a)(2)(A) requires reasonable and enforceable control measures in plans. EPA has interpreted this requirement to imply that control measures in a plan be in regulatory form (i.e., adopted rules) at the time of the plan submittal. However, EPA has the authority to conditionally approve a plan revision based on a commitment to adopt specific enforceable measures by not later than one year after the date of conditional approval of the plan revision [Section 110(k)(4)].

California Clean Air Act

The California Clean Air Act (CCAA) also established a legal mandate to achieve applicable health-based state air quality standards at the earliest practicable date. According to the CCAA, districts must design their air quality management plan to achieve a reduction in basinwide emissions of five percent or more per year (or 15 percent or more in a three-year period) for each nonattainment pollutant or its precursors (Health & Safety Code 40914). However, an air basin may use an alternative emission reduction strategy which achieves a reduction of less than 5 percent per year if it can be demonstrated that either of the following applies:

- The alternative emission reduction strategy is equal to or more effective than the 5 percent per year control approach in improving air quality; or
- That despite the inclusion of every feasible measure, and an expeditious adoption schedule, the air basin is unable to achieve the 5 percent per year reduction in emissions.

The CCAA requires the District Governing Board to determine that the AQMP is a cost effective strategy that will achieve attainment of the state standards by the earliest practicable date (Health & Safety Code 40913). In addition, the Plan must include an assessment of the cost effectiveness of available and proposed measures and a list of the measures ranked from the least cost effective to the most cost effective [Health & Safety Code 40922(a)]. However, the implementation schedule is to be developed based on several factors, including but not limited to technological feasibility, emission reduction potential, rate of reduction, public acceptability and enforceability. [Health and Safety Code 40922(b)].

Socioeconomic Analyses

California Senate Bill 1928 (Health and Safety Code Section 40440.8), which took effect on January 1, 1991, requires a socioeconomic analysis of each District rule that has significant emission reduction potential. In addition to the elements required under the District's resolution, Senate Bill 1928 requires the District to estimate employment impacts and to perform socioeconomic analyses of the project alternatives developed pursuant to the California Environmental Quality Act (CEQA). Under CEQA, the District must examine a number of alternatives to a rule or regulation to ensure that sufficient policy options are considered. Shortly after Senate Bill 1928 was enacted, Assembly Bill 2061 (Health and Safety Code Section 40728.5) was approved and requires that the Governing Board actively consider any socioeconomic impacts in its rule adoption proceedings.

These state law requirements set forth the minimum standards by which the SCAQMD assesses socioeconomic impacts of proposed plans or rules. The SCAQMD, however, exceeds these standards and continually seeks to improve its analysis of socioeconomic impacts by expanding its methods and tools. SCAQMD has a socioeconomic team that works with other SCAQMD staff and outside consultants with a depth of expertise in developing proposed regulations or rules. Over the years, the District's socioeconomic analyses have diversified and evolved as shown in Figure 1. SCAQMD relies on both quantitative and qualitative analyses, describes impacts in absolute and relative terms, and has refined its analysis to a more detailed level than used in any previous AQMP. In addition, the SCAQMD is beginning to use industry field surveys to better understand potential impacts and to determine the underlying socioeconomic characteristics of industries.

1994 AQMP REVISION

The 1994 AQMP Revision contains 103 short- and intermediate-term measures to be implemented by the District, local governments, the California Air Resources Board and the Environmental Protection Agency between 1994 and 2005. The AQMP also contains long term measures that rely on the advancement of technology and control methods that can reasonably be expected to occur between 1994 and 2010. In total, these measures will result in achievement of the applicable federal ambient air quality standards in the Basin.

Implementation Schedule

In the draft AQMP released in April 1994, the implementation schedule was based on the nine criteria listed in Table 1. The schedule was primarily based on

FIGURE 1
Evolution of Socioeconomic Analysis at the District

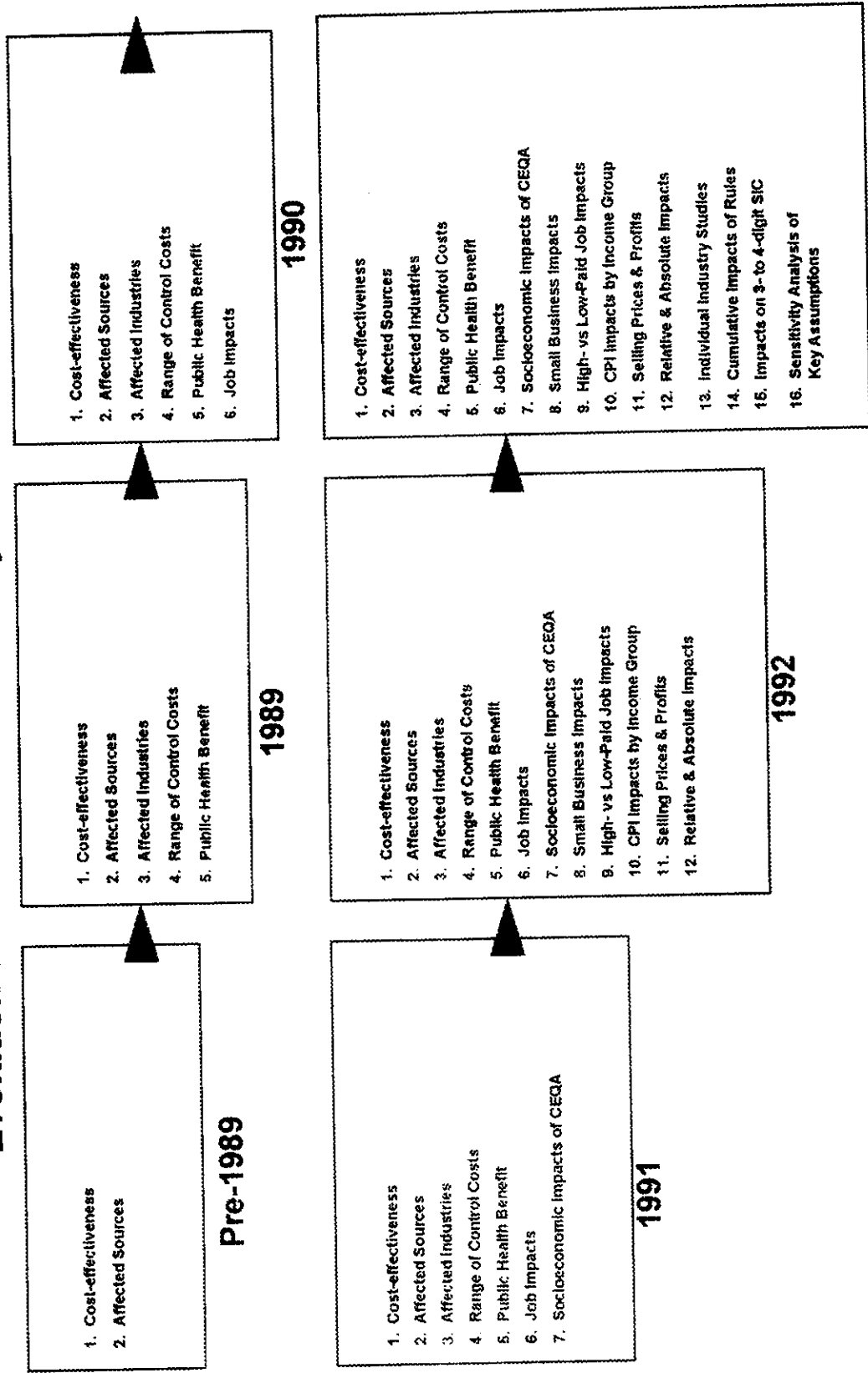


TABLE 1
Criteria for Evaluating 1994 AQMP Control Measures

Criteria	Description
Cost Effectiveness	The cost of a control measure to reduce air pollution by one ton [cost covers obtaining, installing, and operating the control measure].
Efficiency	The positive effects of a control measure compared to its negative effects.
Emission Reduction Potential	The total amount of pollution that a control measure can actually reduce.
Enforceability	The ability to force polluters to comply with a control measure.
Equity	The fairness of the distribution of all the positive and negative effects among various socio-economic groups.
Legal Authority	Ability of the District or other adopting agency to implement the measure or the likelihood that local governments and agencies will cooperate to approve a control measures
Public Acceptability	The support the public gives to a control measure.
Rate of Emission Reduction	The time it will take for a control measure to reduce a certain amount of air pollution.
Technological Feasibility	The likelihood that the technology for a control measure will be available as anticipated.

the schedule set forth in the 1991 AQMP as modified through District Board action. New items proposed for the first time in the Plan were placed in the appropriate position on the existing schedule based on a review of the AQMP control measure prioritization factors listed in Table 1.

As part of its analysis for the AQMP EIR staff examined a project alternative which established the implementation schedule based on cost effectiveness. The staff's analysis of this alternative showed that it achieves the same or greater air quality benefits, with equivalent environmental impacts as the proposed project, and the staff recommended this alternative as the proposed project. The AQMP implementation schedule was subsequently modified based on cost effectiveness.

Although the adoption schedule for control measures in the AQMP is largely based on cost effectiveness, some measures are proposed for adoption based on other considerations. Specifically, 16 measures are scheduled to be adopted either sooner or later than they would otherwise be scheduled for adoption based on cost effectiveness. This is due to the following considerations:

(1) VOC RECLAIM

Six command and control measures subsumed by the proposed VOC RECLAIM program are delayed to coincide with the adoption of the program. These measures would be pursued if VOC RECLAIM is not developed.

(2) ARB Rulemaking Schedule

Four measures are to be developed by ARB which has developed a rulemaking calendar based on its own considerations.

(3) Industry Requests

One measure, ERCs for Heavy-Duty Buses, will allow the generation of credits from heavy-duty buses. This measure is scheduled for adoption in 1995 based on requests from several public and private organizations.

(4) District Resources

Finally, three measures were scheduled based on District resource considerations. These measures were scheduled based on their relative emission reduction as compared to the amount of District resources needed to develop the measure into a rule. Two of the three measures were delayed to coincide with the development of rules on similar processes to efficiently utilize staff resources.

Cost Effectiveness

As noted in Table 2, 39 of the 103 short- and intermediate-term measures in the AQMP are quantified relative to cost effectiveness. There are several reasons why the other measures are not quantified at this stage. They include: lack of emission reductions estimates for the control measure or that the measure is an educational or an administrative measure; the control measure is not fully defined relative to potential control methods; the control measure is to be developed by ARB or EPA; the control technology requires further development and costs are not available; and/or (5) the measure is a proposed market based measure and costs were estimated for the command and control measures proposed to be subsumed under the proposed market based measure.

The adoption schedule for these control measures without cost data took into account legal constraints (e.g., BACM measures for PM10 to be adopted no later than February 1997, Federal Register vol 56, no. 51, March 15, 1991), and the other criteria described above and specified in Health and Safety Code 40922(b).

FUTURE RULEMAKING PROCESS

As part of the rulemaking process, District staff undertakes an extensive evaluation of the socioeconomic impacts of any proposed rule. This analysis first begins with the cost effectiveness data developed for the AQMP control measure and presented in the Plan. During the Plan process, the cost effectiveness analysis is generally based on simple industrywide assumptions on the overall affected sources. As a control measure is re-evaluated for rule adoption, specific affected sources are identified and control options are re-examined for feasibility. Cost effectiveness is then assessed on each control option.

In addition, this analysis involves the following items:

- Annual Costs
- Affected Facilities/Industries
- Job Impacts by Industry by Occupation
- High- versus Low-paid Job Impacts
- Impacts by Income Group and Small Business Impacts
- Cumulative Impacts of Rules
- Survey of Affected Facilities
- Impacts on Product Prices and Profits
- Relative and Absolute Impacts

It should be noted that the SCAQMD's socioeconomic analysis exceeds the legal requirements set forth in various legislative bills and the Board resolutions. Nonetheless, the SCAQMD continually seeks to improve its analysis by expanding its methods and tools. The SCAQMD has been working with a Socioeconomic Technical Review Committee (SETRC) and the Ethnic Community Advisory Council (ECAC) to refine its socioeconomic impact assessments. The SETRC is composed of leading experts in the socioeconomic field, representatives from the regulated community, and participants from public interest groups. The ECAC consists of representatives from grass roots organizations who work with their respective communities extensively.

Table 2
1994 AQMP Short- and Intermediate- Control Measures

Measure No. 1994	Control Measure Title	Lead		Cost- Effect.	No Cost Data
		Implement. Agency	Adoption Year		
	SIP Amendments	SCAQMD	1994-1998	1998	1
	Control of Emissions from Res. & Com. Water Heaters	SCAQMD	1994	1996-2002	Savings
PRC-03	Control of Emissions from Restaurant Operations (VOC, PM10)	SCAQMD	1994	1996-2001	\$12,320
CTS-05	Further Emission Reductions from Perchloroethylene	SCAQMD	1994	1996	\$4,751
MON-03	Inspection and Maintenance Program Enhancement	SCAQMD	1994	1996-2010	5
CTS-06	Further Emission Reductions of Aerosol Coatings (VOC)	ARB	1994	1995-2001	\$319
FUG-01	Control of Emissions from Organic Liquid Transfer	SCAQMD	1995	1996	\$552
CMB-04	Area Source Credits for Energy Conservation	SCAQMD	1995	1997-2000	3
ISR-01	Special Event Centers	SCAQMD	1995	1997-2010	5
RFL-02	Further Control of Emissions from Gasoline Dispensing	SCAQMD	1995	1996-2000	\$915
CMB-11	Emission Reductions from (Non-RECLAIM) Incinerators	SCAQMD	1995	1996	5
CMB-05	Clean Stationary Fuels	SCAQMD	1995	1996-2008	\$3,461
CMB-B	Small Boilers and Process Heaters	SCAQMD	1995	1998-2000	\$1,555
FUG-02	Active Draining	SCAQMD	1995	1996	\$2,802
MON-06	Emissions Reduction Credit for Heavy-Duty Trucks	SCAQMD	1995	---	3
MOF-04	Off-Road Mobile Source ERC Program	SCAQMD	1995	1996-2010	3
CMB-F	Further Control of Emissions from ICE	SCAQMD	1995	1998-2007	\$1,136
MOF-03	Emission Reduction Credits for Leaf Blowers	SCAQMD	1995	1996-2010	3
WST-01	Control of Emissions from Livestock Waste	SCAQMD	1995	1996-2003	\$1,367
CMB-09	Emission Reductions from Petroleum Refinery FCCUS (PM10)	SCAQMD	1995	1997	5
CMB-10	Emission Reductions from Glass Melting Furnaces (Non-RECLAIM) (NOx)	SCAQMD	1995	1998	5
ISR-07	Parking Cash-out	SCAQMD	1995	1997-2010	\$22,989
MON-07	Emission Reductions for High Emitters	SCAQMD	1995	1996-1999	5
ISR-05	Trip Reduction for Schools	SCAQMD	1995	1997-2010	5
CTS-01	VOC RECLAIM	SCAQMD	1995	1998-2010	3
CMB-03	Area Source Credits for Commercial and Residential Combustion Equipment	SCAQMD	1995	1997-2000	3
CMB-A	Misc. Combustion Sources	SCAQMD	1995	1998	\$1,380
RFL-03	Control of Emissions from Pleasure Boat Fueling	SCAQMD	1995	1996	\$303
MON-05	ERC for Heavy-Duty Buses	SCAQMD	1995	1995-2010	\$38,156
I	Registration and Commercial Vehicles	SCAQMD	1995	1997-2000	5
M	Regional Railroad Emission Reduction Measure	EPA	1995	2000-2010	6
FIP-08	Military Aircraft Operations (40 CFR 52.2972)	EPA	1995	2001-2005	6
MOF-06	Control of Emissions from Aircraft and Ground Support Equipment (VOC, NOx)	EPA	1995	1998-2010	6
FIP-05	Nonroad Vehicles & Engines, On-Highway Motorcycles (40 CFR 52.2969)	EPA	1995	1996-2010	6
MOF-02	Control of Emissions from Ships & Ports	EPA	1995	1997-2010	6
FIP-09	Enhanced In-Use Compliance for Non-Road Engines over 37 kw Fleet Program	EPA	1995	1996-2010	\$1,550
FIP-06	National Marine Engines (40 CFR) (Pleasure Craft)	EPA	1995	1998-2010	6
FIP-07	National Phase 1 and 2 Nonroad Engines & Vehicles (40 CFR 52.2969)	ARB	1995	1996-2010	6
ARB-01	PM Trap Retrofit for HD Diesel Bus	ARB	1995	---	6
MON-08	Further NOx Reductions for Heavy-Duty Engines (NOx)	ARB	1995	1996-2010	6
MOF-01	Limit Sulfur Content of Marine Fuel Oils	ARB	1995	1997	\$3,587
BCM-04	Control of Emissions from Agricultural Activities	SCAQMD	1996	1997	6
BCM-02	Further Reductions from Construction & Demolition	SCAQMD	1996	1997	5
CTS-K	Further Reductions from Aerospace Coating (Amend Rule 1124)	SCAQMD	1996	2000-2005	\$5,132
BCM-05	Control of Emissions from Misc. Sources	SCAQMD	1996	1997	5
BCM-03	Further Reductions from Unpaved Roads, Unpaved Parking Lots & Staging Areas	SCAQMD	1996	1997	5
CTS-J	Further Reductions from Wood Products (R1136)	SCAQMD	1996	2000-2005	\$15,181
CMB-C	Control of Emissions from Curing and Drying Ovens	SCAQMD	1996	1999	\$4,758
CTS-I	Further Reductions from Graphic Arts (R1130.1)	SCAQMD	1996	2000	\$9,483
PRC-02	Further Emission Reductions from Bakeries (VOC)	SCAQMD	1996	1998-2001	\$9,217
ISR-02	Regional Shopping Centers	SCAQMD	1996	1997-2010	5
CTS-C	Further Reductions from Solvent Cleaning Operations (R1171)	SCAQMD	1996	2000	\$11,441
MSC-02	In-Use Compliance Program for Air Pollution Control Equipment (All Pollutants)	SCAQMD	1996	1997	4
CTS-B	Further Reductions from Petroleum Cold Cleaning	SCAQMD	1996	1997-1998	\$586
ISR-06	Enhanced Rule 1501	SCAQMD	1996	1997-2010	\$26,139
CTS-A	Electronic Components Manufacturing	SCAQMD	1996	1997	\$629
PRC-01	Control of Emissions from Woodworking Operations	SCAQMD	1996	1998	\$4,069
PRC-04	Emission Reductions from Rubber Products Manufacturing (VOC, PM10)	SCAQMD	1996	1997	5
C	Further Reductions from Metal Parts & Products (R1107)	SCAQMD	1996	2000-2005	\$9,448
Ph	Emission Red. from Malt Beverage Prod. & Wine- or Brandy-Making Facilities (VOC)	SCAQMD	1996	1997	5
CTS-E	Further Reductions from Adhesive (R1168)	SCAQMD	1996	2000-2005	\$23
MON-01	ERC for Low-Emission Retrofit Fleet Vehicles	SCAQMD	1996	1996-2010	3
FUG-03	Floating Roof Tanks	SCAQMD	1996	1998	5

Table 2
1994 AQMP Short- and Intermediate - Control Measures

Measure No. 1994 AQMP	Control Measure Title	Lead		Adoption Year	Implement. Year	Cost- Effect.	No Cost Data
		Implement. Agency	Year				
CTS-D	Further Reductions from Marine & Pleasure Craft Coating (R1106,1106.1)	SCAQMD	1996	2000-2005		\$1,535	
CTS-G	Further Reductions from Paper, Fabric and Film (R1128)	SCAQMD	1996	2000-2005		\$101	
BCM-01	Control of Emissions from Paved Roads	SCAQMD	1996	1997			5
FIP-10	Control of Emissions from Pesticide Application (VOC)	EPA	1996	1999		\$1,662	
WST-04	Disposal of Materials Containing Volatile Organic Compounds (40 CFR 52.2954)	EPA	1996	1998-2001			5
WST-03	Waste Burning (VOC)	EPA	1996	1998			5
ARB-04	Fleet Average Stds for Post 2003	ARB	1996	2004-2010		\$0	
FSS-01	Stage I Episode Plans	---	1997	2000-2010			5
FUG-04	Fugitive Emissions	SCAQMD	1997	2000-2010			5
CMB-08	Gas Fired Petroleum Refinery Process Heaters	SCAQMD	1997	2002			5
RFL-01	Control of Emissions from Utility Engine Refueling	SCAQMD	1997	2000-2010		\$29,996	
ISR-04	Airport Ground Support Access	SCAQMD	1997	1999-2010		\$18,075	
CMB-02	Control of Emissions from Combustion Equipment at Non-RECLAIM Facility	SCAQMD	1997	1998-2008			5
CMB-01	Phase II RECLAIM	SCAQMD	1997	1998-2008			3
CTS-F	Further Reductions from Motor Veh. Non-assembly Line Coatings (R1151)	SCAQMD	1997	2001		\$20,418	
CMB-D	Control of Emissions from Afterburners	SCAQMD	1997	2000		\$11,269	
CMB-07	Petroleum Refinery Flares	SCAQMD	1997	1999			5
WST-02	Composting of Dewatered Sewage Sludge (VOC, PM10)	SCAQMD	1997	1998-2000			5
CTS-07	Further Emission Reductions from Architectural Coatings (Rule 1113)(VOC)	SCAQMD	1997	2001-2006		\$16,541	
CTS-02	Control of Emissions from Solvents and Coatings at Non-RECLAIM Facilities (VOC)	SCAQMD	1997	1998-2005			5
CTS-L	Emission Reductions from Automotive Assembly	SCAQMD	1997	1997			5
TCM-01	Transportation Improvements	SCAG	1997	2000-2010			5
ARB-05	I/M for Light-duty Diesels	ARB	1997	---			6
ARB-02	Control of Off-Cycle Emissions	ARB	1997	---			6
CMB-E	Control of Emissions from Metal Melting Furnaces	SCAQMD	1998	2000		\$39,000	
MKT-02	At the Pump Fee	---	*	2008-2010			3
MKT-01	Emission/VMT	---	*	2008-2010			3
MKT-03	Congestion Pricing	---	*	2008-2010			3
CTS-04	Public Awareness/Education Programs - Area Sources	SCAQMD	*	1997			2
MON-02	Eliminate Excessive Car Dealership Vehicle Starts	SCAQMD	*	---			5
ATT-02	Advanced Shuttle Transit	SCAQMD	*	1995-2010			4
MON-04	Eliminate Excessive Curb Idling	SCAQMD	*	---			5
CTS-03	Consumer Product Education Labeling Program	SCAQMD	*	1998-2005			2
ATT-01	Telecommunications	SCAQMD	*	1995-2010			4
ATT-05	Intelligent Vehicle Highway System (IVHS)	SCAQMD	*	1995-2010			4
MSC-01	Promotion of Lighter Color Roofing & Road Materials & Tree Planting	SCAQMD	*	1996-1998			2
ATT-04	Alternative Fuel Vehicle/Infrastructure	Partnership	*	1995-2010			4
ATT-03	Zero-Emission Vehicle/Infrastructure	Partnership	*	1995-2010			4
FIP-02	Restriction on Importation of 49-State Motor Vehicles (40 CFR 52.2964)	EPA	*	---			6
FIP-01	Enhanced In-Use Compliance Program for Cars and Light- and Medium-Duty Trucks	EPA	*	---			6

- 1 Administrative
- 2 Educational
- 3 Market-Based Strategy
- 4 No Emission Reduction Credit
- 5 Unknown Control Cost data or Emission Reduction
- 6 Existing or Proposed Federal or State Requirement
- * Measure is a Proposed Program and/or Requires Legislation

SUMMARY

The 1994 AQMP contains an implementation schedule which is largely based on the cost effectiveness ranking of the measures. Some measures are scheduled to be implemented sooner or later than this schedule due to several considerations including the VOC RECLAIM program, ARB's rulemaking schedule, industry requests, and/or District resources.

The Plan as adopted contains some measures that are as yet unquantified relative to their cost effectiveness. Some of these measures were scheduled for adoption based on several criteria defined in state law and the AQMP, including technological feasibility, emission reduction potential, public acceptability and others. These measures either lack emission reductions or control efficiency information, or they are market based programs, such as VOC RECLAIM. For the latter, staff estimated the cost of the command and control programs subsumed by the control measure, which serves as a worst-case cost for the program. As experienced with the NO_x and SO_x RECLAIM program, market based approaches can often offer more cost effective solutions to traditional command and control measures.

Finally, the staff undertakes an extensive socioeconomic impact analysis as part of the rule development process for each control measure. The costs of the rule along with other socioeconomic parameters are provided to the Board for its consideration during adoption deliberations.