2003/2004 Ozone Planning Process
Revised Control Measure Evaluations
March 23, 2004

Introduction

Air District and MTC staff have revised the preliminary evaluations of potential control measures under consideration for inclusion in regional ozone strategies. The evaluations were discussed at two meetings of the Ozone Working Group. Staff has revised the evaluations based on comments received at the OWG meetings, comments received subsequent to the meetings, and further staff analysis. The Air District has evaluated control measures for stationary, mobile and miscellaneous other sources, while MTC has taken the lead on evaluating transportation control measures. (The Air District also evaluated a limited number of transportation measures because they affect Air District programs and/or were proposed by Air District Board members, Advisory Council members or staff.) The attached tables summarize the Air District's evaluations. MTC's TCM evaluations are provided in a separate report.

Results

Based on the revised evaluations, the control measures under consideration have been placed into the eleven categories indicated in the table below. The attached tables are summaries of the evaluations, listing the control measure title and a brief description. Staff can elaborate on any evaluation of interest.

Category	**Category Definiton**	**# of measures**
Potentially Viable Measures	Measures that, based on analysis to date, meet the evaluation criteria and thus may be appropriate for inclusion in ozone plans.	45
Potentially Viable Measures (Transport)	Measures that primarily control NOx and may have limited benefit for Bay Area air quality, but that may be appropriate for inclusion in ozone plans in order to reduce transport to other regions.	12
Measures Already Implemented	Measures that already have been adopted as Air District regulations or otherwise have been implemented through regional or State programs.	52
Measures Needing Further Study	Measures that meet some evaluation criteria, but that require further analysis to determine whether they are potentially viable.	36
Measures Needing Funding	Measures that meet some evaluation criteria, but that require funding in order to be implemented. These are mostly incentive measures, primarily for mobile sources	18
Measures Needing Legislation	Measures that meet some evaluation criteria, but that require State or federal legislation in order to be implemented.	9
Measures That Are Not Technically Feasible	Measures for which the necessary technology is not currently available or foreseen in the reasonable future.	7
Measure That Are Not Enforceable	Measures for which there is no clear enforcement mechanism.	5
Measures That Are Not Cost Effective	Measures that meet some evaluation criteria, but for which the emission reductions are so small and/or the implementation costs are so high that the measure would not be cost effective.	14
Measures With Negligible Emission Reductions or No Bay Area Sources	Measures with extremely low or no emissions reductions or for which no applicable facilities exist in the Bay Area.	86
Measures Under Jurisdiction of Other Agencies	Measures for which other federal, State or local agencies have regulatory authority. These are mostly measures related to mobile sources and consumer products.	93

Control Measures Evaluated

Air District staff evaluated a wide range of potential control measures compiled from the following sources:

- Ozone Working Group
- Community meetings
- Other air districts' regulations, control measures and suggestions
- District Board members, Advisory Council and staff
- Members of the public
- Previous Bay Area air quality plans

Criteria

The evaluation criteria used by Air District staff are based on State and national law, regulations and guidance. These criteria include:

- Technological feasibility
- Total likely emission reductions
- Cost-effectiveness
- Enforceability
- Rate (and timing) of emission reduction
- Public acceptability, including interests and concerns of community members
- Pollutant reduced (VOC, NOx, or both)
- Potential adverse environmental impacts
- Socioeconomic impacts

The California Clean Air Act requires the Air District to include all feasible measures in the strategy to attain the State 1-hour ozone standard. The criteria listed above help determine feasibility.

For transportation and mobile source measures, the Ozone Strategy may include longer-term measures that require funding or legislation. For example, the *2000 Clean Air Plan* includes such measures (e.g., market based TCMs requiring legislation).

Next Steps

The Air District and MTC are developing control measures to be included in the 2004 Ozone Strategy, based on the evaluations in this report and MTC's TCM evaluation report. The Air District and MTC invite public discussion and input on how the evaluations should inform the control measures under development for the 2004 Ozone Strategy.

Potentially Viable Measures - Preliminary

Measure Name	Measure Description
	Mobile Source
1. Clean Vehicles/Engines/Fuels	Provide incentives for low emission vehicles, engines and fuels in light, medium and heavy duty vehicles.
2. Motor Vehicle Operation and Maintenance Education Program	Educate people regarding the detrimental effects of motor vehicles and how to reduce emissions from vehicles through proper maintenance and operation.
3. Fleet Modernization for Heavy-Duty Diesel Vehicles	Modernize heavy-duty diesel fleet by accelerating the turnover of older higher emitting engines to cleaner late model vehicles and engines.
4. Modernize Older Engines	Use incentives to accelerate the replacement/upgrade of older engines/vehicles to Tier 2 and 3 diesel engine standards.
5. Zero Emission Off Road Equipment	Provide incentives to convert off-road diesel equipment to zero emissions.
6. Green Contracting Ordinance	Local government ordinance would require contractors to procure and operate low-emission vehicles.
7. Heavy-Duty Diesel Engine Repower	Provide incentives to repower heavy duty diesel vehicles with new lower emitting engines.
8. Idling from Construction and Mining Equipment	Provide incentives to reduce idling by construction and mining equipment using idling reduction devices and voluntary idling reduction.
9. Incentives for Clean (Construction) Vehicle Use	Incentives to repower, retrofit or use alternative fuels in off-road diesel construction vehicles.
10. Incentives for Companies to Use Alternative Fuels	Provide financial incentives for companies to use alternative fuel vehicles.
11. Incentivize the Replacement of Construction Equipment Engines	Provide incentives to replace uncontrolled engines in construction equipment with new equipment meeting current emission standards.
12. New Low-Emission Heavy Duty Vehicles	Provide incentives to purchase new heavy duty vehicles with 1.8 g/bhp-hr natural gas engines instead of 2.5g/bhp-hr diesel engines.
13. Off-road Applications where On-road Engines Are Or Can Be Used	Identify and offer incentives for applications where on-road engines can be used in place of off-road certified engines.
14. Truck Idling Rule and Devices	Encourage reduced idling by heavy-duty diesel trucks.
15. Replace Standard Gasoline Powered Mowers with Electric Ones	Implement a rebate program to encourage the retirement of old gasoline mowers.
16. Near Term Engine Retrofit or Aftertreatment	Incentives provided for the purchase and installation of retrofit and aftertreatment devices for off-road heavy-duty diesel vehicles and equipment.

Measure Name	Measure Description
	Other
17. Carsharing	Encourage expanded carsharing programs
18. Clean Air Labeling, Energy Conservation and Public Education Programs	Augment "clean air labeling" to encourage consumer and company purchases of clean products.
19. Location Efficient Mortgages	Promote location efficient mortgages to encourage home purchases near transit
20. Parking Programs	Promote parking programs to reduce motor vehicle use
21. Smart Growth	Encourage implementation of Smart Growth Strategy/Regional Livability Footprint project
22. Spare the Air Program Enhancements	Add various elements to the District's summertime Spare the Air program
23. Transit Use Incentives	Encourage the expansion of successful employer-based transit subsidy programs throughout the region.
	Stationary Source
Measure Name	**Measure Description**
24. 2000 CAP C8 - Draining of Liquid Products / Sumps and Pits	Further study measure C8 from the 2000 Clean Air Plan recommends investigation of VOC emissions from refinery wastewater systems including drains, sumps and pits or junction boxes.
25. 2000 CAP G3 - Seasonal Limitations on Organic Liquid Storage Tank and Wastewater Separator Cleaning and Refinery Shutdowns	Control Measure G3 in the 2000 Clean Air Plan suggests that intermittent, but discretionary activities such as organic liquid tank cleaning, wastewater separator cleaning and vessel depressurization be controlled or conducted outside the ozone season.
26. Adoption of refinery measures	Promptly adopt all refinery control measures and further study measures (especially regarding valves)
27. Auto Refinish coatings (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin auto refinish coating and concluded that there may be potential reductions based on projects in development by CAPCOA Enforcement Managers and ARB.
28. Auto Refinish Coatings (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that automotive refinish coating VOC rules developed by San Joaquin Valley UAPCD be evaluated for feasibility in other air districts.
29. Auto Refinishing	Adopt some lower VOC limits for auto refinishing operations in South Coast Rule 1151, and eliminate two coating categories. Replace the categories by lower VOC requirements for the individual coatings that make up those categories.
30. Further reductions from Organic Liquid Storage (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that emission limits found in South Coast AQMD Rule 1178: Further Reductions of VOC Emissions from Storage Tanks at Petroleum Facilities be evaluated for feasibility in other air districts.
31. Flares (2001 SIP process)	Further study measure FS 8 suggests, in part, control of emissions from flares at petroleum refineries.

Measure Name	Measure Description
32. Gasoline bulk terminals and plants	Require backpressure monitors and controls to shut down loading when backpressure exceeds a set standard, set more stringent leak standards, increase enforceablility, and lower emission standard.
33. Graphic Arts (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin graphic arts rules and concluded that there did not seem to be significant emission reductions to be gained from this source category
34. Graphic Arts (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that graphic arts rules developed by Sacramento and South Coast districts be evaluated for feasibility in other air districts.
35. High emitting spray booths (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that additional control of high emitting spray booths developed by South Coast AQMD be evaluated for feasibility in other air districts.
36. Marine Vessel Loading (2001 SIP process)	Further study measure FS-11 recommends control of marine organic liquid cargoes where control is not currently required.
37. Miscellaneous Industrial Coatings & Solvent Operations (VOC)	SCAQMD Control Measure CTS-10 suggests reduction of VOC emissions from industrial and commercial coating operations.
38. Polyester Resin Operations (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that polyester resin manufacturing operations rules developed by South Coast and Yolo Solano districts be evaluated for feasibility in other air districts.
39. Pressure Relief Devices (2001 SIP process)	Further Study Measure FS 8 suggests, in part, additional control of pressure relief devices (PRD's) or banning venting of PRD's directly to atmosphere.
40. Storage of Organic Liquids (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin organic liquid storage rules and concluded that some emission reductions might be achieved through adoption of SCAQMD Rule 1178 dome requirements and low-vapor pressure liquid controls
41. Sumps, Pits & Wastewater Processing Equipment (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce VOC emissions from refinery wastewater processes, specifically, sumps, pits and wastewater processing equipment (Table 4.3).
42. Vapor recovery at refineries	Require vapor recovery at refineries.
43. Wastewater Systems (2001 SIP process)	Further Study Measure FS-9 suggests additional control of emissions from drains, pipes, and junction boxes in refinery wastewater treatement systems and investigation of the potential to control emissions from other areas of the treatment system.
44. Wood Products Coating	Reduce allowable VOC content for specified categories of wood product coating operations including stains, sealers, and strippers. Also recommended is a reduction in the exemption level.
45. Wood Products Coating (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that VOC limits for wood products coatings as developed by Yolo Solano APCD be evaluated for feasibility in other air districts.

Potentially Viable Measures (Transport) - Preliminary

Stationary Source

Measure Name	Measure Description
46. Boilers, Steam Generators & Process Heaters, 2MMBtu/hr –5MMBtu/hr (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to reduce NOx emissions from boilers, steam generators and process heaters smaller than are currently regulated, 2MM to 5MM btu/hr (Table 4.3).
47. Boilers, Steam Generators and Process Heaters (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that boiler, steam generator and process heater NOx limit rules developed by Sacramento, San Joaquin, and South Coast districts be evaluated for feasibility in other air districts.
48. Boilers, Steam Generators, Process Heaters/Space Heaters	This measure suggests further NOx reductions from boilers, steam generators and process heaters.
49. Boilers (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin boiler rules and concluded that additional Bay Area reductions may be feasible.
50. Cogeneration	This measure would require further NOx controls for engines and turbines used in cogeneration.
51. Heaters and Boilers	This measure suggests further reduction of NOx emissions of water heaters and boilers of greater than 75,000 btu/hr.
52. Large water heaters and small boilers (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that NOx limits for large water heaters and small boilers developed by Santa Barbara APCD be evaluated for feasibility in other air districts.
53. Refinery boilers and heaters (2001 SIP process)	Control refinery boilers to 10 ppm with no averaging between units
54. Stationary Gas Turbines (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin stationary gas turbine rules and concluded that San Joaquins' Tier 2 NOx limits are the most stringent and that further inventory assessment is needed for this source category.
55. Small boilers (2001 SIP process)	Control NOx from smaller boilers (Sacramento rule)
56. Stationary Gas Turbines (SJVUAPCD)	Adoption of SJVUAPCD Rule 4703 (Stationary Gas Turbines) Tier II limits.
57. Water Heaters & Boilers, 75,000 Btu/hr - 2 MMBtu/hr (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control NOx emissions from water heaters and steam boilers of greater than 75,000 btu/hr (Table 4.3).

Measures Already Implemented - Preliminary

Mobile Source

Measure Name	Measure Description
58. Allow District to Opt in to Test-only Program	Allow district to opt in to test-only element of Enhanced Smog Check program.
59. Encourage Cleaner Fuels	Promote compressed natural gas (CNG) infrastructure.
60. Light-duty Vehicle Retirement Program	Implement a light-duty vehicle early retirement program. Focus on gross polluters. Incentives are a potential implementation mechanism.
61. Smog Check (2001 SIP process)	Subsidize Smog Check repairs for low income drivers
Other	
62. Bicycles (Spare the Air)	Encourage cities and counties to establish special bikestreets/boulevards
63. Cleaner Vehicle Incentives	Ideas like free tolls and "green" parking spots for natural gas and other alternatively fueled vehicles
64. Expand Network (Spare the Air)	Expand STA network and evaluate STA survey data to determine program effectiveness and potential enhancements.
65. HOV (Spare the Air)	Modify HOV lane requirements, including number of lanes on Bay Bridge, reducing occupancy requirements, expanding time limits
66. Legislative changes to expand authority	Include control measures that require new or expanded legislative authority.
67. Specific Measures (Spare the Air)	STA outreach to cities, counties, employers, and educational institutions should provide specific lists of measures to be implemented, tailored to specific situations.
68. Telecommuting (Spare the Air)	Promote telecommuting
69. Weekend Spare the Air	Citing increased ozone levels on weekends, it was suggested that certain activities that produce ozone precursors be changed to different days of the week or times of day to reduce ozone formation (weekend effect).
Stationary Source	
70. 2000 CAP C4 - Vessel Depressurization Rule	The 2000 Clean Air Plan control measure C4 recommends more stringent standards for Bay Area Regulation 8, Rule 10: Process Vessel Depressurization.
71. 2000 CAP F7 - Easing of Administrative Requirements for Use of Lower Emitting Technology	Further Study Measure F7 from the 2000 Clean Air Plan recommends that, in some cases in conjunction with other regulatory actions, administrative requirements could be eased to encourage technologies that emit less than a rule requires.

Measure Name	Measure Description
72. Air Stripping (Soil Decontamination) (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control VOC emissions from air stripping or soil decontamination (Table 4.3).
73. Can and Coil	Lower VOC limits for Can and Coil Coating Operations.
74. Can and Coil Coating (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin can and coil coating rules and concluded that this did not seem to be a source category that could produce significant emission reductions.
75. Control of chemical manufacturing (VOC and NOx)	Control pharmaceutical and chemical manufacturing emissions to a level equivalent to SMAQMD Rule 464 and Rule 455 and adopt NOx limits for these operations.
76. Decontamination of soil (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that soil decontamination emission limits developed by South Coast AQMD be evaluated for feasibility in other air districts.
77. Efficient Agricultural Practices	This control measure suggests an outreach campaign to encourage farms to reduce water use, reduce organic pesticide use, and lower diesel emissions from agricultural engines. The primary focus is irrigation engines.
78. Electric power plants (2001 SIP process)	Control electric power plants to 1.5 ppm as required in Massachusetts
79. Emission Reductions from Fugitive Emission Sources (VOC)	This measure would further reduce emissions from fugitive sources through potential controls that could include enhanced inspection and maintenance, leakless valves, vapor recovery, and degassing controls.
80. Emission Reductions from Petroleum Refinery Flares (All)	This measure requires : (1) development of a refinery flare emission inventory, and (2) if emissions are significant, investigation of control options that could be implemented through MOUs or a rule.
81. Flares (Landfills)	This control measure would impose BACT-level requirements on existing landfill flares in the Sacramento region.
82. Foam Blowing	Control expandable polystyrene molding operations (styrofoam manufacturing).
83. Fuel Storage	This measure would impose the same level of control on storage tanks in Placer, El Dorado, and Feather River districts as exists in the Yolo-Solano district (2002 amendments to Yolo-Solano Rule 2.21).
84. Gasoline dispensing (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that gasoline dispensing rules developed by Sacramento, South Coast and Yolo Solano districts be evaluated for feasibility in other air districts.
85. Gasoline Transfer (SJVUAPCD)	In September, 2002, the San Joaquin Valley Unified APCD amended Rule 4622: Transfer of Gasoline into Motor Vehicle Fuel Tanks. The amendments were to satisfy EPA policy requirements.
86. Graphic Arts	Coordinate graphic arts printing and coating VOC limits between the districts in the Sacramento basin.
87. Hydrogen Plant Process Vents (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that emission limits found in South Coast AQMD Rule 1189: VOC Emissions from Hydrogen Plant Process Vents be evaluated for feasibility in other air districts.
88. Landfills & Other Waste Disposal/Treatment	Control landfill emissions in all counties in the Sacramento basin to as stringent a level as does Sacramento.

Measure Name	Measure Description
89. Landfills (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that solid waste disposal site emissions limits developed by South Coast AQMD be evaluated for feasibility in other air districts.
90. Landfills, soil decontamination and wastewater treatment	Collect and control landfill emissions in parts of the Sacramento basin that do not have rules, control wastewater collection and treatment facilities, and control soil decontamination.
91. Magnet Wire Coating Operations (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control emissions from magnet wire coating operations (Table 4.3).
92. Marine Coatings	Control marine coatings similar to the existing Bay Area and South Coast rules.
93. Metal Parts and Products Coating	Reduce the allowable VOC limits for coating metal parts and products in the area of the Sacramento basin that do not have rules.
94. Mineral Products	This measure would control NOx emissions from mineral processing facilities like lime and cement kilns through adoption of a cement kiln rule and/or eliminatation of exemptions in other NOx rules.
95. Non-volatile solvents	Implement a Clean and Green program for replacing volatile solvents with non-volatile solvents
96. Organic Liquid Loading/Transfer (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control emissions from the loading and transfer of organic liquids (Table 4.3).
97. Organic Liquid Storage and Transfer (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that organic liquid storage tank and transfer limits as developed by Yolo Solano APCD be evaluated for feasibility in other air districts.
98. Plastic Parts and Products Manufacturing	Control emissions from polyester resin operations by the use of transfer efficient spray guns and vapor suppressed resins.
99. Semiconductor Manufacturing	Incorporate Bay Area and South Coast standards into the Placer County semiconductor manufacturing rule. South Coast Rule 1164 has more stringent standards for cleaning.
100. Solvent cleaning (2001 SIP process)	Require low VOC (aqueous) solvents.
101. Storage & Transfer of Gasoline @ Terminals & Bulk Plants (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce emissions from the storage and transfer of gasoline at bulk terminals and bulk plants (Table 4.3).
102. Thinning, Surface Preparation and Cleanup Solvents	Implement existing standards coating thinning and wipe cleaning standards in effect in Sacramento in the other non-attainment Sacramento basin districts and, reduce allowable VOC limit to 50 g/l.
103. Usage of solvents (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that solvent usage rules found in South Coast AQMD Rule 442 be evaluated for feasibility in other air districts.
104. Valve maintenance	Require frequent maintenance at refineries to assure valves, O rings and other equipment are working properly
105. Valves and Flanges (2001 SIP process)	Control measure SS-16 requires low emission valves defined as "leakless".

Measure Name	Measure Description
106. Vessel Depressurization (2001 SIP process)	Control Measure SS-17, Improved Vessel Depressurization Rule, suggests emissions be abated to a more stringent standard than BAAQMD Regulation 8, Rule 10 currently requires.
107. VOC Fugitives from Petroleum Refineries and Chemical Plants (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce fugitive VOC emissions from refinery operations and chemical plants (Table 4.3).
108. Wipe cleaning and solvent cleaning limits	Sacramento suggests that the Bay Area adopt emission limits in Rule 8-16 as stringent as Sacramento standards for general, medical, electronic and graphic arts cleaning; for adhesive and auto coating remover; and coating equipment cleanup.
109. Wood flat stock coating (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that wood flat stock coating VOC limits developed by South Coast AQMD be evaluated for feasibility in other air districts.

Measures Needing Further Study - Preliminary

Measure Name	Measure Description
	Mobile Source
110. Mitigation Fee Program for Federal Sources	Charge fees to pre-empted sources and use fees to fund projects to mitigate emissions from these sources.
111. Encourage Use of Biodiesel Fuel	Encourage the use of biodiesel fuel in Bay Area fleets.
	Other
112. Indirect Source Mitigation Program	Expand program to reduce emissions from indirect sources.
113. Free Transit (Spare the Air)	Provide free transit service to general public on STA days. Program could begin as pilot program with free transit on STA days upwind of ozone excess areas.
	Stationary Source
114. Agricultural Irrigation Engines	This measure would reduce NOx emissions from diesel engines used to run irrigation pumps by requiring replacement with electric motors or emission controls
115. Agricultural Irrigation Engines (SJVUAPCD)	SJVUAPCD has instituted an incentive program to control NOx emissions from agricultural irrigation engines but not require controls as they are not allowed to be permitted under state law (2002 and 2005 Rate of Progress Plan, Table 4.3).
116. BACT for Stationary Diesel Equipment	Require all stationary diesel equipment to meet BACT for hydrocarbons and nitrogen oxides. BACT would be defined as biodiesel paired with catalysts.
117. Valves and Flanges (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin valve and flange rules and concluded that there did not seem to be significant emission reductions to be gained from this source category
118. Vacuum trucks	Require control of organic emissions from vacuum trucks used to transport sludges in refineries and for clean up of spills of organic materials.
119. Storage of Organic Liquids (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin organic liquid storage rules and concluded that some emission reductions might be achieved through adoption of SCAQMD Rule 1178 dome requirements and low-vapor pressure liquid controls
120. Stationary IC Engines (SJVUAPCD)	This measure has been implemented by SJVUAPCD through amendments to its Rule 4702 which impose BARCT limits on spark-ignited engines

Measure Name	Measure Description
121. Solvent Cold Cleaning (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin solvent cold cleaning and wipe cleaning rules and concluded that they needed more information about Bay Area rule applicability and emission inventory to evaluate this source category.
122. Restaurant emissions (2001 SIP process)	Adopt a rule limiting emissions from commercial charbroilers based on South Coast Rule 1138.
123. Refinery wastewater ponds	Control emissions from refinery wastewater ponds
124. Refineries	Increase stringency of refinery regulations
125. Organic Liquid Storage Tanks (2001 SIP process)	Further Study Measure FS 10 suggests improved tank seals and fittings, lower vapor pressure exemptions, improved tank design, vapor recovery for tanks, and control of emissions from tank degassing and cleaning.
126. Livestock Waste (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control or remove the emissions from livestock waste based on South Coast's measure WST-01 (Table 4.3).
127. Livestock Waste	This measure suggests control of the VOC component of the decompostion of livestock waste by exporting agricultural operations, exporting waste, or capturing emissions from anaerobic digestion of waste.
128. IC Engines (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin IC engine rules and concluded that additonal emission reductions could be gained from the Bay Area rule for this source category
129. IC Engine non-agricultural	This measure would impose RACT/BARCT NOx limits for spark-ignited IC engines and a 600 ppm NOx limit for diesel engines.
130. Glass Melting Furnaces (SJVUAPCD)	Set NOx limits for glass melting furnaces based on ARB achievable performance standards and Texas limits.
131. Further Emission Reductions from Architectural Coatings and Cleanup Solvents	SCAQMD Control Measure CTS-07 suggests further control of VOC limits and clean up solvents subject to South Coast Rule 1113: Architectural Coatings.
132. Food product manufacturing and processing (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that emission limitations for food product manufacturing and food processing developed by South Coast AQMD be evaluated for feasibility in other air districts.
133. Emissions from Cooling Towers	Control emissions from cooling towers used in the oil refining process by minimizing leaks of organic liquids into cooling water.
134. Emission Reductions from Livestock Waste (VOC/NH3)	SCAQMD Control Measure WST-01 would reduce emissions from (primarily) dairies by moving them out of the South Coast air basin, moving manure out of the air basin or controlling emissions from anaerobic digestion of wastes.

Measure Name	Measure Description
135. Emission Reductions from Composting (VOC/NH3)	SCAQMD Control Measure WST-02. This measure would require controls on co-composting and green waste composting.
136. Cooling water from coke cutting operations	Require high pressure water used to remove coke from coking drums to be sent through the refinery wastewater collection and control system to control any VOC's in the water, or to control emissions from the coke cutting process in some other manner.
137. Cooking-Commercial	Control VOC emissions from chain driven and under-fire commercial broilers.
138. Commercial charbroiling (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that commercial charbroiling emissions limits developed by San Joaquin Valley UAPCD be evaluated for feasibility in other air districts.
139. Commercial Charbroilers (SJVUAPCD)	The San Joaquin Valley Unified APCD has recommended, in their 2002 and 2005 Rate of Progress Plan, control of commercial charbroilers. In March, 2002, the SJVAPCD adopted Rule 4692 to limit VOC and PM from charbroilers.
140. Commercial and Industrial Composting (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control emissions from commercial and industrial composting based on South Coast measure WST-02 (Table 4-3).
141. Back-up diesel generators	Control back-up diesel generators, especially in communities of color, through consideration of cumulative impacts of multiple generators locating in one area
142. Architectural Coatings (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that architectural coating rules developed by Sacramento, San Diego, San Joaquin, Santa Barbara, South Coast and Tehama districts be evaluated for feasibility in other air districts.
143. Architectural Coatings	Reduce architectural VOC limits based on SCAQMD future limits and to further reduce limits based on zero-VOC technology as iterated in the SCAQMD 2003 draft Plan
144. Adhesives (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin adhesive and sealant rules and concluded that VOC limits are similar for most categories, but that overall, the South Coast Rule 1168 was the most stringent.
145. 2000 CAP F8 - Limitations of Solvents Based on Relative Reactivity	Further Study Measure F8 in the 2000 Clean Air Plan suggests rules consider the relative reactivity of organic compounds to reduce ozone formation.

Measures Needing Funding - Preliminary

Measure Name	Measure Description
	Mobile Source
146. Reduce Particulate Matter From High Polluting Vehicles	Reduce particulate emissions from the worst polluting trucks and other vehicles.
147. Incentives for Hybrid Vehicles	Provide financial incentive to purchase hybrid vehicles
148. Water Transit Engine Modifications, Alternative Fuels and Propulsion Systems	Provide incentives to reduce emissions from diesel engines in ferries by using improved engine technology, after-treatment and alternative fuels, or through the replacement with alternative propulsion systems.
149. Expand Hybrid Bus Fleet	Encourage the use of electric hybrid buses by transit operators.
150. Reduce Marine Vessel Emissions	Reduce emissions from existing harbor craft and ocean going fleets with cleaner engines and/or cleaner fuels.
151. Incentives to Shift Non Construction Offroad Emissions to Low Ozone Season	Provides incentive to not operate commercial and industrial equipment (non-construction) during the ozone season.
152. Heavy-Duty Engine ECM Recalibration	Heavy duty vehicles that are MY1994-1998 can be reflashed to the lowest MY2005 emission standards.
153. Fleet Upgrade in Locomotives	Encourage faster turnover of locomotive engines to lower emitting engines under new US Tier 0 standards.
154. Catalytic Converter Replacement Program	Implement an incentive program to replace the catalyst in light duty vehicles and trucks including SUVs.
155. Free Gas Caps	Provide free replacement gas caps to light- and medium-duty vehicle owners.
156. Incentives for Newer Boats and Engines	Measure would provide a financial incentive to consumers to purchase a 4-stroke instead of a 2-stroke marine engine in new recreational boats.
157. Retrofits- NOx Control Technologies - Locomotives	Provide incentives to retrofit diesel locomotives with selective catalytic reduction and diesel oxidation catalysts.
158. Automobile Maintenance Organization	Participating light and medium-duty cars and trucks would be provided maintenance that would ensure emission benefits above and beyond the current Smog Check program.
159. Fuel Changes - Locomotives	Encourage the use of alternative diesel fuels and diesel fuel formulations for diesel locomotives.
160. Tug/Push Boat Activity Reductions	Provide incentives for tug and push boats to not operate auxiliary engines on Spare the Air days.

Measure Name	Measure Description
	Other
161. Station Car & Low Emission Vehicle Share Program	Develop a station vehicle program using low emission vehicles that are leased by residents.
	Stationary Source
162. Incentives for Microturbine Engines in Small Power Generation Applications	Provide incentive for the purchase of microturbine engines (i.e., < 500kW) that provide electric generation capability.
163. Portable Engine and Generator Emissions Reduction	Retrofit/replace existing diesel powered electrical generation units.

Measures Needing Legislation - Preliminary

Measure Name	Measure Description
	Mobile Source
164. Raise Fuel Prices	Raises the price of diesel and gasoline fuel by $0.50/gallon during the ozone season.
165. Continue Carl Moyer Program	Continue funding and implementing the Carl Moyer Program.
166. Further Emission Reductions from In-Use Off-Road Vehicles and Equipment (VOC, NOx, PM10)	Regulation would require the retrofit of existing off-road engines or accelerate engine turnover.
167. District Should Regulate Mobile Sources	Obtain authority for the District to regulate mobile sources which are currently regulated by ARB and EPA
168. Emission Fee Program for Port-Related Mobile Sources	Imposes fee for port-related mobile sources (e.g., ships, trains, trucks, off-road equipment) and use fees to fund projects to mitigate emissions from these sources.
	Other
169. Bridge Tolls (Spare the Air)	Increase Bay Bridge tolls during peak hours on STA days.
	Stationary Source
170. Mandatory Reduction from Stationary Sources on High Ozone Days	This measure would require large facilities to reduce emissions on days when high ozone levels are expected.
171. Emission Charges of $5,000 per Ton of VOC for Stationary Sources Emitting Over 10 Tons per Year (VOC)	This measure would impose an emissions fee on large stationary sources emitting more than 10 tons per year of VOC.
172. Federally Mandated Ozone Nonattainment Fee (SJVUAPCD)	This measure proposes ozone nonattainment fees based on based on SJVUAPCD Rule 3710

Measures that are Not Technically Feasible - Preliminary

	Measure Name	Measure Description
		Mobile Source
173.	Blue Skies Series Engines 25 hp or Greater	Encourage the use of engines that participate in EPA's voluntary "Blue Sky Series" engine program.
174.	Longer Term Engine Retrofit or Aftertreatment for Diesel Engines Greater than 25 hp	Provide incentive to retrofit off-road heavy-duty diesel engines greater than 25 hp with injection retard, NOx adsorber technology, or plasma NOx reduction technologies.
		Stationary Source
175.	Electric Utility/Other Gas Turbines	This measure would require SCONOx or other technologies that can achieve NOx levels of 2 ppm for large gas turbines used to generate electricity.
176.	Further Emission Reductions from Large VOC Sources (VOC)	This measure proposes emission reductions from the largest stationary sources through the use of emission reduction plans.
177.	Gasoline Bulk Plants	Further control of bulk plants by 1) adopting uniform 0.6 lbs VOC/1000 gal loaded standard, 2) adopting a lower (0.08 lbs/1000 gal) standard for bulk plants, and 3) adopting tank seal standards in El Dorado County.
178.	Industrial Process Operations (VOC)	This measure would further reduce VOC emissions from miscellaneous industrial operations ranging from rubber, plastic, and glass manufacturers or fabricators to bakeries.
179.	Residential Water Heaters (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control NOx emissions from residential water heaters (Table 4.3).

Measures That Are Not Enforceable - Preliminary

Measure Name	Measure Description
	Mobile Source
180. Emission Reduction Credits (2001 SIP process)	Eliminate emission reduction credits
181. Increased Marketing of Hybrid Vehicles	Encourage automobile manufacturers to increase the marketing of light-duty hybrid vehicles.
182. Limit Heavy Duty Construction Equipment Operation to 6 AM to 10 AM	Limit the use of construction equipment rated over 50 hp to 4 hours per day from 6 AM to 10 AM
	Other
183. Diesel Trucks (Spare the Air)	Shift diesel truck traffic to weekends on STA weekdays
184. Parking (Spare the Air)	Implement parking surcharge on STA days at worksites and BART stations

Measures that Are Not Cost Effective - Preliminary

	Measure Name	Measure Description
		Mobile Source
185.	Ban or Restrict Use of Recreational Vehicles	Ban or limit the use of recreational vehicles (not boats) from operating on Spare the Air days.
186.	Construction Ban on Spare the Air Days	Prohibits operation of all off-road construction equipment on Spare the Air days.
187.	Limiting Pleasure Craft/Vehicle Use Above 100F	Prohibits the use of recreational boats when temperatures exceed 100 degrees F.
188.	Limiting Pleasure Craft/Vehicles Use	Ban the use of all pleasure craft and off-road recreational vehicles on Spare the Air days.
189.	Mowing Restrictions	Ban the use of lawn and garden equipment on Spare the Air days.
190.	Neighborhood Electric Vehicles	Provide electric vehicles for use by neighborhood residents.
191.	Restrict Use of Portable Engines	Prohibit the use of portable engines on Spare the Air days.
192.	Smoking Vehicle Photo Radar	Use remote sensors to identify smoking vehicles and then notify smoking vehicle owners to encourage them to repair their vehicles.
		Other
193.	Xeriscaping	Adapt landscaping (reduction of lawn coverage at residences and institutional grounds) to reduce the need for lawn and garden equipment.
		Stationary Source
194.	Boilers, Steam Generators and Process Heaters (SJVUAPCD)	Adoption of SJVUAPCD Rule 4306 (Boilers, Steam Generators, and Process Heater - Phase III) limits for boilers with a capacity >=5 million Btu/hr
195.	Emission Reductions from Restaurant Operations (VOC, PM10)	SCAQMD Control Measure PRC-03 suggests control of under-fire charbroilers in addition to the existing controls on chain driven charbroilers.
196.	Mandatory Facility Reduction on Spare the Air Days	Reducing facility production so as to reduce air emissions by 20% on Spare the Air days.
197.	Wineries	Control the emissions from fermentation processes in wineries.
198.	Wineries (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to reduce emissions from fermentation processes in wineries (Table 4.3).

Measures with Negligible Emission Reductions or No Bay Area Sources - Preliminary

	Measure Name	Measure Description
		Mobile Source
199.	Pilot credit generation (2001 SIP process)	Electric ship hotelling to generate mobile source emission credits
200.	Restrict Use of Diesel Agricultural Water Pumps to Night Time	Restrict use of diesel agricultural water pumps to nighttime on Spare the Air Days.
201.	Truck Stop Electrification	Elimination of truck idling at truck stops by providing hook-ups for air, heating and cooling and electric power to run truck systems and trailer refrigeration.
		Other
202.	Bicycle Access and Facilities	Provide dedicated bike car on BART trains during peak periods
203.	Community-based emissions trading program	Provide communities with incentives to reduce household and business emissions, including through vehicle scrappage, no or low drive days, energy efficiency measures, small motor replacement programs, and chimney or bbq retrofits.
204.	Economic Incentive Programs (All)	This measure would expand emission trading programs to allow for broader trading of and between mobile and stationary sources.
205.	Install air filtration systems in new homes and existing homes near pollution sources in order to improve indoor air quality	Examine indoor air quality and install air filtration systems in new homes and in existing homes near pollution sources in order to improve indoor air quality. People with asthma should especially be provided with such systems.
206.	New car interiors (suggested in 2001 SIP process)	During the 2001 SIP development process, a suggestion was made to require control of VOC that off-gasses in new cars
207.	Set an amount of canopy tree cover	Require local cities and counties to plant trees at a certain rate in order to achieve a set amount of tree canopy in order to reduce ozone (similar to the Urban Heat Island effect)
208.	Smog Check (Spare the Air)	Provide free smog check on STA days, including gas cap test
209.	Urban Heat Island Mitigation Measures	Reduce temperatures in urban areas through tree planting (trees with low VOC emissions) and promotion of building and paving materials with higher reflectivity.
210.	2000 CAP A3 - Improved Aerospace Coatings Rule	2000 Clean Air Plan further study measure A3 recommends consideration of lower VOC limits for aerospace coating operations.
211.	2000 CAP A6 - Surface Coating of Plastic parts and Products Rule	The 2000 Clean Air Plan Further Study Measure A6 recommended lower VOC limitations for plastic parts coating and inclusion of rubber and glass coating similar to South Coast Rule 1145.

Measure Name	Measure Description
	Stationary Source
212. Additional NOx Reductions for RECLAIM (NOx)	The RECLAIM program's NOx allocations (emission allowances) decline annually until 2003. This measure would reduce NOx allocations for each year from 2003 to 2010.
213. Adhesives and Sealants	Most air districts in California have adhesive VOC limits based on ARB's 1998 RACT/BARCT determination. This measure would reduce limits in adhesive categories for which South Coast AQMD Rule 1168 limits are more stringent.
214. Adhesives and Sealants (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that adhesive and sealant VOC limit rules developed by Sacramento, South Coast and Tehama districts be evaluated for feasibility in other air districts.
215. Aerospace Coating	Aircraft and aerospace coating standards in the Sacramento basin should be made consistent with the Sacramento rule, which is already as stringent as the South Coast aerospace coating rule, Rule 1124.
216. Aerospace coating (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that aerospace coating VOC limits developed by South Coast AQMD be evaluated for feasibility in other air districts.
217. Agricultural / Prescribed Burning	This measure would ban prescribed burning on high-ozone days or spare-the-air days.
218. Ambient air monitoring	Provide air quality monitors in residential communities near refineries
219. Asphalt Batch Plant Dryers/Heaters (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to impose NOx limits on asphalt batch plant driers and heaters (Table 4.3).
220. Asphalt Paving/Roofing	This measure would require controls on asphalt kettles used in built-up roofing.
221. Asphaltic Concrete Production	This measure would impose NOx and VOC controls on asphalt hot mix plants.
222. BAAQMD Rule 8-19 Metal Parts Coating	Sacramento suggests that the Bay Area should adopt the same metal parts coating limits as found in Sacramento Rule 451.
223. BAAQMD Rule 8-20 Graphic Arts	Sacramento suggests lowering the exemption level for graphic arts operations to 60 lbs emissions/mo from 175 lbs emissions/mo. They recommend a VOC limit of 80 g/l for fountain solutions instead of 8%.
224. BAAQMD Rule 8-29 Aerospace Coatings	Sacramento suggests changing limits in the BAAQMD aerospace coatings rule to parallel the SMAQMD and SCAQMD rules.
225. BAAQMD Rule 8-51 Plasting Welding Adhesive	The Bay Area should lower its VOC limit for plastic welding adhesive from 500 g/l to 450 g/l and its VOC limit for specialty contact adhesive from 400 g/l to 250 g/l .
226. BAAQMD Rule 8-6 Bulk Plants and Terminals	Sacramento suggests that BAAQMD Rule 8-6 should include a standard of 0.08 lbs/1000 gals for loading racks at terminals (as found in Sacramento Rule 447).

	Measure Name	Measure Description
227.	Bakeries	Lower the exemption limit for bakeries in Sacramento Rule 458 from 100 lbs to 50 lbs and make the rule uniform throughout the Sacramento air basin.
228.	Bellows valves	Bellows valves should be required as replacements for existing refinery valves
229.	Breweries	Control ethanol emissions from breweries by 25% using water scrubbers or carbon adsorption.
230.	Can and Coil Coatings (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to reduce allowable VOC emissions from can and coil coating operations (Table 4.3).
231.	Cap and Trade Emissions Reduction Program similar to RECLAIM	This measure would implement a cap and trade program like the South Coast AQMD RECLAIM program.
232.	Chamber Fumigation of Agricultural Products (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control emissions from fumigation chambers used for agricultural products (Table 4.3).
233.	Cutback Asphalt Application (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control the allowable solvent content of cutback asphalt to reduce VOC emissions (Table 4.3).
234.	Degreasing/Solvent Cleaning	Reduce allowable VOC content of cold cleaners to 25 g/l VOC based on SCAQMD Rule 1171.1.
235.	Dryers & Dehydrators (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control NOx emissions from dryers and dehydrators based on Houston's Air Quality Plan (Table 4-3).
236.	Fenceline monitoring	Encourage laser detection fenceline monitoring at all refineries
237.	Flares (SJVUAPCD)	This measure proposes limits for flares based on based on SJVUAPCD Rule 4311
238.	Fluid Catalytic Cracking Units (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control NOx emissions from fluid catalytic cracking units used in oil refining (Table 4.3).
239.	Food and Ag Processing	This measure would impose NOx controls on dryers used in the processing of fruits, grain, rice, cereals, tomatoes, and other crops.
240.	Formica Manufacturing	Limit emissions from formica manufacturing facilities.
241.	Fuel Handling	Provide incentives for the surrender of gasoline containers used to fuel lawnmowers and other lawn and garden equipment.
242.	Furnaces (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control NOx emissions from furnaces (Table 4.3).
243.	Glass coating (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that glass coating VOC limits developed by San Joaquin Valley UAPCD be evaluated for feasibility in other air districts.

	Measure Name	Measure Description
244.	Glass Coating Operations (SJVUAPCD)	San Joaquin Valley Unified APCD adopted Rule 4610: Glass Coating Operations which requires the use of low-VOC coatings on glass, including mirror backing coatings.
245.	Glycol Dehydrators	San Joaquin and Ventura have adopted rules that control emissions from glycol dehydrators associated with natural gas drilling by requiring emissions to be vented to a control device, consisting of an existing flare or reboiler.
246.	Glycol Reboilers (SJVUAPCD)	SJVUAPCD adopted Rule 4408 to control emissions from glycol dehydrators associated with natural gas drilling and extraction.
247.	Incinerators	This measure would impose NOx standards on solid waste incinerators.
248.	Leaks and Releases from Petroleum Refineries and Chemical Plants (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that fugitive emission limitations for refineries and chemical plants found in SCAQMD Rule 1173 be evaluated for feasibility in other air districts.
249.	Lime Kilns (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that NOx limits for lime kilns developed by San Joaquin Valley UAPCD be evaluated for feasibility in other air districts.
250.	Lime Kilns (SJVUAPCD)	This measure proposes limits for lime kilns based on based on SJVUAPCD Rule 4313
251.	Metal Parts Coating (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that miscellaneous metal parts and products coating rules developed by San Diego and South Coast districts be evaluated for feasibility in other air districts.
252.	Natural Gas Fuel Specifications	Examine whether natural gas with higher-than-normal levels of ethane and propane lead to higher NOx emissions that could be reduced through fuel specifications.
253.	Natural Gas Fuel Specifications (NOx)	This measure would set higher heating value limits for natural gas.
254.	Offset Trigger Levels	Lower offset trigger levels from 50 TPY to 15 TPY and require an offset ratio of 1.3:1 for offsets not at the site.
255.	Oil and Gas Fugitive Emissions	Control fugtive emissions from natural gas wells, collection and distribution systems through housekeeping rules, such as dictating frequency of inspection and repair requirements.
256.	Oil and Gas Fugitives (SJVUAPCD)	Control Measure 4403 from the SJVUAPCD 2002 and 2005 Ozone Rate of Progress Plan (Table 2) proposes to reduce emissions from oil and gas production operations and natural gas processing plants.
257.	Paper Fabric & Film Coating Operations (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce VOC emissions from paper, fabric and film coating operations (Table 4.3).

	Measure Name	Measure Description
258.	Paper, Fabric and Film	Adopt VOC limits for screen printing and for paper, fabric and film coating in the portions of the Sacramento basin that do not regulate this activity.
259.	Permit Exemptions	This measure suggests lowering permitting thresholds, conducting inspections to find sources that should have permits, adding permit conditions, and improving enforceability of existing permit conditions.
260.	Petroleum Dry Cleaning	This measure would ban use of transfer systems in petroleum dry cleaning.
261.	Petroleum Production	Control fugtive emissions from oil wells, collection and distribution systems through housekeeping rules, such as dictating frequency of inspection and repair requirements.
262.	Pharmaceutical and Cosmetic Manufacturing	Reactors, distillation columns, crystallizers, and centrifuges should be required to meet 85% control system efficiency and 90% control efficiency.
263.	Plastic parts coating	Implement an average VOC limit of 4.5 lbs/gal for plastic, rubber and glass surface coating operations.
264.	Plastic, rubber and glass coating (2001 SIP process)	Set VOC limits for rubber and glass coating (SCAQMD rule)
265.	Pleasure Craft Coating	Adopt VOC limits for surface coating of pleasure craft consistent with limits in South Coast, Ventura and San Diego.
266.	Polymeric Foam Product Manufacturing (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce emissions from polymeric foam product manufacturing (Table 4.3).
267.	Promotion of Catalyst-Surface Coating Technology Programs (All Pollutants)	This measure suggests coating of surfaces that contact large amounts of ambient air with catalysts that would convert ozone or CO into harmless gases.
268.	Residential water heaters (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that residential water heater NOx limits developed by South Coast AQMD be evaluated for feasibility in other air districts.
269.	Screen Printing (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control VOC emissions from screen printing operations (Table 4.3).
270.	Sewer Gas Controls	Rather than vent sewer gases through plumbing vent stacks on structures served by sewers, sewer gases should be captured and used or controlled
271.	Small IC Engines (2001 SIP process)	Control NOx on small (50 to 250 brake horsepower) internal combustion engines
272.	Solid Fuel-Fired Boilers, Steam Generators & Process Heaters (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce NOx emissions from solid fuel fired boilers, steam generators and process heaters (Table 4.3).
273.	Solvent cold cleaning (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that solvent cold cleaning VOC limits developed by South Coast AQMD be evaluated for feasibility in other air districts.

Measure Name	Measure Description
274. Promotion of Catalyst-Surface Coating Technology Programs (All Pollutants)	This measure suggests coating of surfaces that contact large amounts of ambient air with catalysts that would convert ozone or CO into harmless gases.
275. Residential water heaters (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that residential water heater NOx limits developed AQMD be evaluated for feasibility in other air districts.
276. Screen Printing (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further control VOC emissions from scre operations (Table 4.3).
277. Sewer Gas Controls	Rather than vent sewer gases through plumbing vent stacks on structures served by sewers, sewer gases should be used or controlled
278. Small IC Engines (2001 SIP process)	Control NOx on small (50 to 250 brake horsepower) internal combustion engines
279. Solid Fuel-Fired Boilers, Steam Generators & Process Heaters (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce NOx emissions from solid steam generators and process heaters (Table 4.3).
280. Solvent cold cleaning (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that solvent cold cleaning VOC limits developed b AQMD be evaluated for feasibility in other air districts.
281. Solvent Degreasing (2003 ARB rule comparison)	The ARB compared South Coast, Bay Area, Sacramento and San Joaquin solvent degreasing rules and concluded th seem to be significant emission reductions to be gained from this source category.
282. Solvent Degreasing (CAPCOA AFM review)	The CAPCOA All Feasible Measures Review process recommends that solvent degreasing rules developed by Sacra Coast districts be evaluated for feasibility in other air districts.
283. Steam Drive Oil Production Wells (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to further reduce VOC emissions from stea production wells (Table 4.3).
284. Wood and Paper	This measure would impose controls on fiberboard manufacturing or other similar processes such as plywood manufa

Measures Under Jurisdiction of Other Agencies - Preliminary

Measure Name	Measure Description	Agency with Jurisdiction
	Mobile Source	
285. Agricultural Diesel Engine Electrification	Create lower electricity rates in order to encourage conversion to electrical agricultural irrigation pumps.	PUC
286. Aircraft vapor recovery (2001 SIP process)	Require Phase II (aircraft fueling) vapor recovery for aviation gas and jet fuel	FAA
287. Automated Speed Enforcement for Heavy Duty Vehicles and lower speed limit	Utilize technology such as radar equipped traffic cameras to enforce speed limits for heavy-duty vehicles on highways.	Caltrans and CHP
288. Automobile Insurance Charged at Pump or Insurance is Mileage Based	A portion of automobile insurance is incorporated into the price of gasoline which increases the marginal cost of driving, reducing VMT, and encouraging consumers to purchase more efficient vehicles.	State
289. Capture and Control Vapors from Gasoline Cargo Tankers	Enhanced vapor recovery systems for gasoline cargo tankers to reduce evaporation of gasoline from transfer hoses and connections on tanks after delivery is completed.	ARB
290. Clean Fleet Requirements	Require light-duty, medium-duty, and heavy-duty public fleets to meet a combination of fleet average emission reductions and purchasing requirements that would lead to lower NOx and other pollutant emissions.	ARB
291. Clean Fuels for Fleets (SJVUAPCD)	Require fleets to use clean fuels.	ARB
292. Clean Up Existing Off-Road Gas Equipment Through Retrofit Controls (Spark-Ignition Engines 25 hp and Greater)	Reduce emissions from both existing and new light-duty spark ignited engine fleets through retrofit of existing engines and new emission standards at zero and near-zero levels.	ARB
293. Consider Ethanol as an Alternative Fuel	Promote ethanol as an alternative fuel.	ARB
294. Diesel Equipment Meet Performance Standards for HC and NOx Consistent with BACT	Require all mobile diesel equipment, on- and off-road, to meet BACT for hydrocarbons and NOx.	ARB/EPA
295. Dual Fuel Retrofit Technology	Require the dual fuel retrofit of heavy duty diesel vehicles to use LNG.	ARB
296. Electric Burden and Personnel Carriers/Turf Trucks	Require all new burden, personnel carriers and turf trucks to be electric.	ARB
297. Electric Floor Care Sweepers, Scrubbers and Varnishers	Require all new walk-behind sweepers/scrubbers/varnishers to be electric.	ARB

	Measure Name	Measure Description	Agency with Jurisdiction
298.	Electric Forklift Purchases and Forklift Rentals	Require new forklift purchases and forklift rentals to be electric for forklifts with lift capacity equal to or greater than 8,000 lbs.	ARB
299.	Electric Tow Tractors	Require tow tractor manufacturers to only supply zero and near-zero exhaust emission equipment.	ARB
300.	Electric Transportation Refrigeration Units	Require replacement of diesel powered transportation refrigeration units to dual fueled plug-in electric/diesel units, and staged development of truck stop electric refrigeration centers.	ARB
301.	Emulsified Diesel	Require heavy duty vehicles that currently utilize diesel fuel to use emulsified diesel, such as Lubrizol's PuriNOx.	ARB
302.	End the Motorcycle Smog Check Exemption	Require emissions inspections for motocycles.	BAR
303.	Establish a Heavy-Duty Smog Check Program	Develop an on-road heavy-duty vehicle "smog check" program, building upon the existing California Heavy-duty Vehicle Inspection Program, that would test for NOx, ROG/VOC, PM, and other regulated pollutant measurements.	ARB
304.	Fleet rules (2001 SIP process)	Mandate low emission vehicle for public fleets, buses, refuse trucks and airport services	ARB
305.	Fleet Rules for Construction Equipment	Limit the vintage of off-road equipment used in construction projects.	ARB
306.	Halt 30-year Rolling Exemption in Smog Check Program	Halt the 30-year rolling exemption and include pre-1974 vehicles in the Smog Check Program	BAR
307.	Heavy-duty Diesel Vehicle Retrofit	Require retrofit of heavy-duty diesel vehicles using one of three ARB-verified emission control systems.	ARB
308.	Heavy-Duty Gasoline Catalyst Replacement	Replace noncatalyst and two-way catalyst heavy-duty gasoline truck engines with engines certified with three-way catalysts.	ARB
309.	Heavy-Duty Gasoline Catalyst Retrofits	Retrofit noncatalyst and two-way catalyst heavy-duty gasoline trucks with three-way catalysts.	ARB
310.	Implement Registration and Inspection Program	Implement a registration and inspection program for heavy-duty (greater than 50hp) diesel off-road vehicles and equipment.	ARB
311.	Improve Smog Check	Improve current Enhanced Smog Check Program to provide additional emission benefits from light and medium duty vehicles.	BAR

	Measure Name	Measure Description	Agency with Jurisdiction
312.	Increase Registration Fee on Recreational Vehicles	Increase State registration fee for recreational off-road vehicles and pleasure craft to create a disincentive to own these vehicles.	DMV
313.	Increased Smoking Vehicle Enforcement	Use remote sensing to identify high emitters and then require vehicle owners to have their vehicles undergo inspection and repairs.	BAR
314.	Limit Use of Diesel Motors at Ports	Require reduced emissions from diesel trucks and ships at ports.	ARB/EPA
315.	Local Heavy-Duty Diesel Inspection	Augment truck and bus highway inspections with community-based inspections.	Local Government
316.	Low Emission Diesel Fuels	Require year-round use of low emission diesel fuels for diesel off-road vehicles and equipment.	ARB
317.	Low NOx APU	Mandate the installation of low NOx auxilliary power units for on road heavy-duty vehicles to reduce idling emissions	ARB
318.	Lower Emission Standards for Gasoline Trucks	Adopt the federal standard for MY2008+ on-road heavy-duty gasoline engines, bringing the ARB standard in line with federal regulations and aiding in the enforceability of the lower federal standards.	ARB
319.	Lower Emission Standards for New Marine Vessels	Set more stringent emission standards for new harbor craft and ocean-going ships and pursue approaches to reduce land based port emissions.	EPA
320.	Lower Emission Standards for New Off-road Compression Ignition Engines	Set lower emission standards for new off-road compression ignition engines that are 25 hp or greater.	ARB/EPA
321.	Lower Emission Standards for New Off-road Spark-ignited Engines	Set lower emission standards for new off-road spark-ignited engines that are 25 hp or greater.	ARB/EPA
322.	Lower Emiss Spark-ignited Engines with less than 25 hp ion Standards for New Off-road	Set lower emission standards for new off-road spark-ignited engines that are less than 25 hp.	ARB/EPA
323.	Lower Emissions Standards for New Handheld and Non-handheld Lawn and Garden Equipment	Set tighter emissions standards for handheld and non-handheld lawn and garden equipment.	ARB
324.	NOx Screening in the Heavy-Duty Vehicle Inspection Program	Include NOx screening in the currently implemented Heavy-Duty Vehicle Inspection Program.	ARB
325.	Preconditioning of Diesel Engines	Mandate preconditioning of large off-road diesel engines (>25hp) to reduce cold-start emissions.	ARB
326.	Prohibit 2-Stroke Off-Road Engines	Require all existing off-road 2-stroke engines to be retired by Dec 31, 2004, and replaced by MY2005 and newer equipment.	ARB

	Measure Name	Measure Description	Agency with Jurisdiction
327.	Public Agency Fleets (SJVUAPCD)	Requires all government agencies operating heavy-duty vehicles to purchase vehicles with ARB certified optional low-NOx standard, retrofit vehicles with exhaust aftertreatment devices or repower vehicles with cleaner engines.	ARB
328.	Pursue Approaches to Clean Up the Existing Harbor Craft Fleet – Cleaner Engines and Fuels	Reduce emissions from in-use harbor craft engines using add-on controls (e.g.diesel particulate filters), repowering engines, replacing vessels, and cleaner fuels.	ARB
329.	Pursue Approaches to Clean Up the Existing Heavy-Duty Off-Road Equipment Fleet (Compression Ignition Engines) – Retrofit	Require retrofit or replacement of heavy-duty off-road diesel engines and equipment Controls	ARB
330.	Pursue Approaches to Clean Up the Existing Truck/Bus Fleet	Comprehensive strategy to reduce emissions from heavy-duty fleet including retrofit devices and certified engines to reduce PM, reflashing engine control modules, improved on-board diagnostics, and ordinances and hardware to reduce idling emissions.	ARB
331.	Pursue Approaches to Reduce Land-Based Emissions at Ports - Alternative Fuels, Cleaner Engines, Retrofit Controls, Electrification, Education Programs, Operational Controls	Reduce land-side emissions at ports by preparing an inventory of sources, evaluating emission reductions from existing measures, and proposing additional control measures.	ARB
332.	Ramp Meters	Re-evaluate the traffic volumes that trigger ramp-metering lights because the meters sometimes force cars to stop unnecessarily.	Caltrans
333.	Reduce Bus Emissions	Require reduced emissions from existing bus fleet and purchase of low emission buses.	ARB
334.	Reduce Emissions from Aircraft including Taxiing, Take-Offs, and Landings	Implementation methods include engine emission retrofit kits, low-emission new purchases, aircraft taxiing emissions reduction by using a single engine, and electricity as auxiliary power.	ARB
335.	Reduce Emissions from Airport Ground Support Equipment and Ground Access Vehicles	Require fleet average emission reductions for GSE through the purchase of new zero and low emission equipment, accelerating equipment turnover, and retrofitting equipment.	ARB
336.	Reduce mobile source emissions at the Port of Oakland	Require reduced idling of heavy duty vehicles, reduced NOx and PM emissions from ground support equipment, reduced NOx and PM emissions from trucks, and require electric auxilary power for ships at the Port of Oakland	ARB
337.	Reduced Idling of Locomotives	Require retrofit of locomotives to shut-off while at idle.	EPA
338.	Regulate Idling Ships and Locomotives	Require reduced emissions from idling ships and locomotives at ports and train terminals.	EPA

	Measure Name	Measure Description	Agency with Jurisdiction
339.	Regulate Port of Oakland Terminals as Point Sources	Measure would regulate terminals at the Port of Oakland as point sources of emissions due to lines of idling trucks at the terminals.	ARB
340.	Replace or Upgrade Emission Control Systems on Existing Passenger Vehicles – Pilot Program.	Mandatory replacement of catalysts, oxygen sensors and evaporative emission carbon canisters on older passenger cars.	ARB
341.	Require Cruise Ships to Use Electrical Auxiliary Power in Port	Require shore side electrical hookup for cruise ships while in port.	Local Government
342.	Require On-Board Diagnostics on New Diesel and Gasoline Trucks and Buses	Require equipment/software to detect malfunctions and excess emissions on new trucks and buses (on-board diagnostics).	ARB
343.	Require Trucks to Use Clean Fuels	Require trucks to use alternative fuels, such as biodiesel, aqueous diesel and ultra-low sulfur diesel fuel.	ARB
344.	Require Zero Emission Forklifts Where Feasible – Lift Capacity <8,000 pounds	Reduce emissions from forklift fleet by adopting low emission standards for new forklifts and retrofitting existing forklifts.	ARB
345.	Restrict Trucks on Roadways During Commute Hours	Trucks would be banned from use of roads during commute hours or possible daylight hours along the freeways of the region.	DOT
346.	Retrofit Controls and 3-way Catalyst for Spark Ignition Engines	Require retrofit of large spark-ignited offroad equipment (> 25 HP)	ARB
347.	Set Additive Standards for Diesel Fuel to Control Engine Deposits	Require the use of deposit control additives in diesel fuel.	ARB
348.	Set Lower Emission Standards for New Handheld Small Engines and Equipment (Spark Ignited Engines Under 25 hp such as Weed Trimmers, Leaf Blowers, and Chainsaws)	Lower emission standards for engines with displacements at or below 80 cc including such handheld equipment as weed trimmers and leaf blowers.	ARB
349.	Set Lower Emission Standards for New Non-Handheld Small Engines and Equipment (Spark Ignited Engines Under 25 hp Such As Lawn Mowers)	Lower emission standards, including diurnal emission standards, for nonhandheld small off-road engines such as lawn mowers.	ARB
350.	Set Lower Emission Standards for New Off-Road Gas Engines (Spark Ignited Engines 25 hp and Greater)	ARB would adopt exhaust emission standards for new non-preempt engines, in alignment with the federal Tier 2 standards beginning with the 2007 model year.	ARB
351.	Set Low-Sulfur Standards for Diesel Fuel for Trucks/Buses, Off-Road Equipment, and Stationary Engines	Require trucks/buses, off-road equipment, and stationary engines to use low-sulfur diesel fuel to reduce PM and SOx emissions and enable the use of aftertreatment technologies which can reduce NOx, PM, and ROG.	ARB
352.	Stop SFO Runway to Eliminate Construction Emissions	Stop construction of SFO runway expansion to eliminate dust and diesel emissions from trucks hauling fill material.	FAA

	Measure Name	Measure Description	Agency with Jurisdiction
353.	Tighter Emission Standards for Pleasure Craft and Off-road Recreational Vehicles	Set tighter emissions standards for spark-ignited personal watercraft, outboard boat engines and off-road recreational vehicles including motorcycles and all-terrain vehicles.	ARB
354.	Tighter Marine Vessel Emission Standards	Set more stringent marine vessel emission regulations.	EPA
355.	Tighter requirements for manufacturers to certify emissions from new passenger vehicle	Set tighter requirements for manufacturers to certify emissions from new passenger vehicles as defined in the CARB Clean Air Plan under LT/MED-DUTY-3.	ARB
356.	Tighter Requirements for New Passenger Vehicles (LEV III)	Tighter emission standards for new passenger vehicles as defined in the CARB Clean Air Plan under LT/MED-DUTY-4.	ARB
357.	Transfer Smog Check Operations to a Government Agency	Administer smog check by one or two BAR-selected contractors to achieve a uniform level of confidence in test results.	BAR
358.	Truck Inspection and Alternative Fuel Infrastructure on the Oakland Army Base	Develop a truck inspection facility and alternative fuel infrastructure on the Oakland Army Base.	Local Government
359.	Vehicle Fleets Serving Intermodal Facitlities	Require reduced emissions from heavy-duty vehicles serving transportation facilities (port, airport, rail yards)	ARB
360.	VOC/ROG/NOx Standards for Refrigeration Units	Set VOC/ROG/NOx standard for diesel fueled refrigeration units on trucks.	ARB/EPA
361.	Zero Emissions from Stopped Vehicles	Require that all motor vehicle engines (cars, trucks, buses) turn off when vehicle temporarily stops, such as in congested traffic, at red lights, etc.	ARB
362.	Enforce Existing Truck Routes	Provide resources for the enforcement of existing truck routes through consistent monitoring, heavy fines, and other penalties. Get support for regulating illegal truck practices.	Local Government
363.	Provide landscaped buffer between freeways and residential neighborhoods	Design and develop landscaped buffers with tall trees to protect sensitive receptors from particulate matter generated by diesel vehicles on nearby freeways	Caltrans
364.	Regulate household products	Control household products or consumer products by limiting the emissions of ozone forming consituents such as volatile organic compounds.	ARB
365.	ZEV Bus Demonstration and Purchase	Maintain the zero-emission bus (ZEB) demonstration and purchase requirements included in the Public Transit Fleet Rule.	ARB
366.	Route Trucks to Limit Traffic on Residential Streets	Support a community-driven rerouting process to establish new truck routes that limit traffic on residential streets.	Local Government

Measure Name	Measure Description	Agency with Jurisdiction
	Other	
	Stationary Source	
367. Aircraft Fuel Transfer into Storage Tanks (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to control transfer operations of aircraft fuel into storage tanks (Table 4.3).	FAA
368. Diesel-powered equipment at the Port of Oakland	Regulate diesel-powered equipment at the Port of Oakland as point sources of pollution	ARB
369. Enhance New Consumer Product VOC Limits for 2006	Supplement new consumer product VOC limits expected to be enacted by CARB. The program would either establish a cap for consumer products or provide incentives to use lower emitting products.	ARB
370. Enhance New Consumer Product VOC Limits for 2008-2010	Supplement new consumer product VOC limits expected to be enacted by CARB in the 2008 - 2010 timeframe. The measure is the same as was proposed for 2006.	ARB
371. Fossil fuel power plants	District should deny permits for fossil fuel power plants in residential communities	Local Government
372. Implement Existing Pesticide Strategy	Continue implementation by the California Department of Pesticide Regulation of existing strategies intended to reduce VOC emissions from pesticide use.	CA Dept of Pesticides
373. Increase Recovery of Fuel Vapors from Aboveground Storage Tanks	This measure would expand ARB enhanced vapor recovery regulations to cover above-ground storage tanks associated with vehicle refueling.	ARB
374. Pesticides	Reduce solvent content of agricultural pesticide or control pesticide application on Spare the Air days.	CA Dept of Pesticides
375. Portable Engines w/ARB (SJVUAPCD)	SJVUAPCD has proposed, in their 2002 and 2005 Rate of Progress Plan, to jointly investigate controls on portable engines with CARB. These engines are now subject to the statewide Portable Engine Registration Program (Table 4.3).	ARB
376. Recover Fuel Vapors from Gasoline Dispensing at Marinas	This measure would be implemented by ARB regulations that would require vapor recovery for gasoline dispensing operations at marinas.	ARB
377. Reduce Fuel Permeation Through Gasoline Dispenser Hoses	This measure would be implemented by ARB regulations that impose stricter permeability standards for gasoline dispenser hoses.	ARB