2007 Annual Report on the Air Resources Board
Expenditure of Nonvehicular Source Fees
for Fiscal Year 2006-2007

Introduction

Health and Safety Code (H&SC) sections 39612 and 39613 authorize the Air Resources Board (ARB or Board) to assess fees on nonvehicular sources in order to recover the costs of State programs related to nonvehicular sources. In the fiscal year (FY) 2006-2007 budget, the Legislature has authorized the ARB to collect $20 million dollars in fees from facilities and the manufacturers of consumer products and architectural coatings. As required by H&SC section 39612(g), this report to the Governor and the Legislature provides information on the expenditure of the fees collected and a status report on the implementation of the programs prioritized for funding pursuant to H&SC section 39612(c).

Background

The Legislature enacted H&SC section 39612 as part of the California Clean Air Act of 1988 (the "Act", Statutes 1988, chapter 1568). The Act requires attainment of State ambient air quality standards by the earliest practicable date. As part of that mandate, the Act requires the ARB and the air pollution control and air quality management districts (districts) to take various actions to reduce air pollution from motor vehicles, industrial facilities, and other sources of emissions. As originally enacted, section 39612 empowered the ARB to assess fees on nonvehicular sources (i.e., facilities) that were authorized by district permits to emit 500 tons or more per year of any nonattainment pollutant or its precursors.

In 1989, the Board approved the California Clean Air Act Nonvehicular Source Fee Regulation. The original regulation included the fee rate and amounts to be remitted to the ARB by the districts for the first year of the program, fiscal year 1989-90. In subsequent years, the Board approved amendments to the fee regulation identifying the amount of fees to be collected by each district for the following fiscal year. To streamline the process, in 1998, the Board approved amendments that established a process whereby the ARB Executive Officer identifies the fees to be assessed in each fiscal year and notifies the districts and affected facilities.

In 2003, the Legislature enacted Assembly Bill (AB) 10X (Statutes 2003, chapter 1X), which amended section 39612 and added section 39613 to the H&SC. AB 10X made a number of changes to section 39612, including: (1) increasing the cap on stationary source permit fees from $3 million to 13 million for FY 2003-2004**,** and allowing the fees to be adjusted annually thereafter for inflation; (2) expanding the universe of facilities subject to the fees by specifying that the fees are to be collected from facilities authorized by district permits to emit 250 tons (instead of the previous 500 tons) or more per year of any nonattainment pollutant or its precursors; and (3) authorizing ARB to collect the fees directly from all sources subject to the fees. In addition, new section

39613 of the H&SC authorized the ARB for the first time to assess fees on manufacturers of consumer products and architectural coatings sold in California. The fees are assessed on those manufacturers whose total sales of consumer products or architectural coatings will result in the emission in California of 250 tons or more per year of volatile organic compounds (VOC). The ARB must use these fees solely to mitigate or reduce air pollution in the State created by consumer products and architectural coatings. In July 2003, the Board approved a regulation to collect the fees authorized by AB 10X. The full text version of the regulation can be found on the ARB's website at http://www.arb.ca.gov/regact/feereg03/feereg03.htm.

For FY 2003-2004, the Legislature authorized the ARB to collect 17.4 million in fees from facilities and consumer product and architectural coating manufacturers**.**

In 2004, the Legislature authorized the ARB to assess an additional $2.6 million in fees for a total of $20 million for FY 2004-2005. In November 2004, the Board approved amendments to the fee regulation adopted in July 2003 to establish a procedure to collect the additional $2.6 million for FY 2004-2005 from facilities. The amendments also provided for collection from facilities of any legislatively-approved fees in fiscal years beyond 2004-2005 that are in excess of $17.4 million. The full text version of the revised regulation can be found on the ARB's website at http://www.arb.ca.gov/regact/feereg04/feereg04.htm.

H&SC section 39612(g) states: "On or before January 1 of each year, the Board shall report to the Governor and the Legislature on the expenditure of permit fees collected pursuant to this section and section 39613. The report shall include a status of the programs prioritized for funding pursuant to subdivision (c)." As required by section 39612(g), ARB staff has prepared this report to the Governor and the Legislature which describes the expenditures of the fees collected in FY 2006-2007.

Fiscal Year 2006-2007 Expenditures of Nonvehicular Source, Consumer Products, and Architectural Coatings Fees

The total fee expenditures in five major program categories for FY 2006-2007 are shown in Table 1 below. Following Table 1 are descriptions of the activities that are funded by the fees.

Table 1
Expenditure of Fees for Fiscal Year 2006-2007

Activity	Expenditure
Enforcement	$2,268,000
Monitoring and Laboratory	$4,316,000
Research	$2,351,000
Technical Support and Planning	$4,395,000
Rule Development and District Oversight	$6,670,000
Total Expenditures	$20,000,000

General Division Activities for Consumer Products and Architectural Coatings

ARB performs monitoring, emission inventory development and maintenance, research, modeling, and other activities in support of understanding the contribution of consumer products and architectural coatings to California's air quality problems. In addition, several divisions of the ARB perform other activities to understand, regulate, and enforce rules for the pollution coming from these sources. These divisions include the Stationary Source, Enforcement, Monitoring and Laboratory, Research, and Planning and Technical Support Divisions. Collectively, these efforts are an integral and necessary part of mitigating and reducing the emissions from these products. Below, we describe the various activities pertaining to consumer products and architectural coatings undertaken by each division. In the subsequent sections, we provide more detailed information on FY 2006-2007 specific activities pertaining to consumer products and architectural coatings.

Stationary Source Division*:* The Stationary Source Division (SSD) is responsible for: 1) conducting surveys to determine the VOC emissions from consumer products and architectural coatings; 2) developing regulations to reduce the VOC emissions from consumer products, and suggested control measures (SCM) to reduce the VOC emissions from architectural coatings; 3) developing new consumer product elements for the State Implementation Plan (SIP) for ozone (SIPs are air quality plans that are updated frequently to reflect the latest advances in science and control technologies and are required to show how nonattainment areas will attain federal ambient air quality standards); and 4) implementing statewide regulations for consumer products.

To implement the consumer products regulations, SSD staff: 1) performs technology assessments for upcoming standards; 2) issues product determinations; 3) reviews and approves charcoal lighter material certifications; 4) reviews and approves innovative product exemptions; 5) reviews and approves alternative control plans; 6) reviews and approves variance applications; 7) develops and submits SIP amendments to the United States Environmental Protection Agency (U.S. EPA) for approval; and 8) works with the Enforcement Division (ED), Monitoring and Laboratory Division (MLD), and Office of Legal Affairs (OLA) to enforce the regulations. SSD staff works with Planning and Technical Support Division (PTSD) staff on updates to the consumer products and architectural coatings statewide emissions inventory. SSD staff also evaluates industry emissions fate studies through contracts with independent third party reviewers from academia. SSD staff also works with the Research Division (RD) staff to conduct reactivity research and other research related to VOC emissions, and to determine the potential impacts of exempting compounds from the VOC definitions for consumer products and architectural coatings.

Ongoing efforts by SSD staff to implement the 2000 SCM for architectural coatings include: 1) assisting the districts to adopt the SCM (20 districts have adopted the SCM to date); 2) reviewing and approving district rules and submitting them to the U.S. EPA for approval; and 3) performing technology assessments of upcoming standards. The Board considered and approved the 2000 SCM update in October 2007. This update was a major undertaking for staff and required considerable ARB resources.

Enforcement Division: The ED provides support to the consumer products and architectural coatings programs by: 1) purchasing samples for laboratory analysis by MLD to determine compliance with the consumer products regulations; 2) investigating complaints and assisting local air districts in the enforcement of their architectural coatings rules; 3) investigating alleged violations of these regulations and issuing Notices of Violation to retailers, distributors, and manufacturers involved in the sale of non-complying products; 4) working with OLA to resolve cases; 5) issuing enforcement advisories; and 6) working with SSD staff on surveys, regulation development, and implementation, including product determinations.

Monitoring and Laboratory Division*:* The MLD provides support to the consumer products and architectural coatings programs by: 1) developing and evaluating test methods to measure the VOC content of consumer products and architectural coatings, and to measure the reactivity of aerosol coatings; 2) testing consumer products to determine compliance with VOC limits; and 3) testing aerosol coatings to determine compliance with reactivity limits. These efforts are in addition to MLD staff conducting ambient air monitoring to determine which areas of the State are nonattainment for the State and federal ozone and particulate matter air quality standards*.*

Research Division: The RD provides support to the consumer products and architectural coatings programs by: 1) funding and managing research to measure emissions and the actual exposure individuals may experience when using these products; 2) estimating the impact that exposure to emissions may have on health; and 3) exploring the viability of alternative products or control technologies to reduce emissions and exposure through the Innovative Clean Air Technology Program (ICAT) and other research; 4) promoting and managing VOC reactivity research to examine the feasibility of reactivity based control strategies in consumer products and architectural coatings; and 5) evaluate economic impacts of consumer products regulations and architectural coating SCMs. The Indoor Exposure Assessment Section of RD also develops fact sheets and guidelines for the public that identify ways to reduce exposure to pollutants associated with consumer products, coatings, and other indoor sources.

Planning and Technical Support Division*:* The PTSD provides support to the consumer products and architectural coatings programs by: 1) maintaining and updating the emissions inventories for these sources for incorporation into the SIP; and 2) conducting air quality modeling to determine the population exposure to ozone and particulate matter, and to determine the effectiveness of ozone and particulate matter attainment strategies for SIP development and implementation.

Specific Activities Related to Consumer Products and Architectural Coatings in Fiscal Year 2006-2007

Enforcement

Inspections were conducted statewide at a variety of retail stores, commercial businesses, and internet sites which resulted in the collection of approximately 2,300 samples of household and institutional consumer products during Fiscal Year (FY) 2006-2007. The samples were submitted for laboratory analysis to determine compliance with applicable VOC and reactivity limits, after an initial evaluation to determine compliance with the administrative requirements of the consumer product regulations.

The laboratory results for approximately 700 samples indicated that the products may have exceeded the VOC limits. Investigations were initiated to determine if a violation had occurred, identify the parties involved, and determine the magnitude of the violations. As a result of these investigations, 62 notices of violation were issued during the fiscal year. After conducting office conferences, ED staff worked with OLA to resolve the enforcement cases through administrative, civil, or criminal actions. During this fiscal year, 31 cases that were initiated over multiple fiscal years were settled with over $941,000 in penalties collected which helped to mitigate over 105 tons of excess emissions resulting from these violations.

ED staff participated in working group meetings, public workshops, and other regulatory development activities as part of the 2006 Consumer Products Regulation Amendments rulemaking process to clarify definitions and ensure the enforceability of the regulations. ED staff also prepared an Enforcement Advisory to apprise manufacturers and distributors of products of upcoming effective dates for new or modified VOC limits, expired sell through provisions, and prohibitions on the use of chlorinated compounds in certain categories of consumer products. Enforcement actions were initiated for failures to comply with the new date code reporting requirements. ED staff conducted product category determinations along with SSD and OLA staff, upon requests from manufacturers, to evaluate if their products were subject to requirements of the Consumer Products Regulations. ED staff worked with San Luis Obispo County Air Pollution Control District to investigate and prevent an attempt to “dump” non-compliant architectural coatings in the district. In addition, ED staff participated with SSD staff in district and industry conference calls on the development of the update to the 2000 SCM.

Monitoring and Laboratory

Products were routinely submitted for laboratory analysis and samples processed. Test results were evaluated and, when appropriate, used to support follow up enforcement efforts. In response to several external inquiries/requests, laboratory staff in the MLD conducted special studies involving: 1) evaluation of several solvents with respect to low vapor pressure (LVP) VOC criteria; 2) analysis of several architectural coating products for VOC content; 3) analysis of several aerosol coating products to determine the

Product-Weighted Maximum Incremental Reactivity (MIR) values; and 4) evaluation of Method 310 applicability for analysis of specific architectural coatings and several new and proposed categories of consumer products.

Research

A fact sheet entitled “Cleaning Products and Indoor Air Quality” was developed by Research Division staff and published on ARB’s webpage in March 2007. It is based on the results from an ARB-funded study of primary and secondary emissions from household cleaning products completed in 2006 by scientists at the University of California at Berkeley. The fact sheet highlights the findings from the study, describes the health effects of exposure to formaldehyde and ultrafine particles (the key reaction products formed), and identifies actions people can take to reduce risk when using cleaning products that emit terpene fragrance compounds. Minor revisions to the fact sheet are being developed to include information on emissions of ozone from indoor air cleaning devices that can contribute to chemical reactions indoors in the presence of terpene-emitting products. The fact sheet is available at http://www.arb.ca.gov/research/indoor/cleaning.htm. An outreach program for professional cleaners, cleaning organizations, and cleaning service providers was developed and is set to begin in August 2007.

RD staff managed a research contract entitled "Development of the SAPRC-07 Chemical Mechanism and Updated Ozone Reactivity Scales." The project was developed by RD staff with support from SSD and PTSD and was completed by Dr. William Carter of the University of California, Riverside, as of May 2007. The updated reactivity scales will be used to update the Maximum Incremental Reactivity (MIR) scale used in the California Aerosol Coatings Regulation. In March 2007, RD staff with support from SSD developed a new reactivity research project entitled “Reactivity Estimates for Selected Consumer Products Compounds.” The outcome of this project is expected to help ARB examine the feasibility of reactivity-based VOC control strategies for certain consumer products categories. RD staff with support from SSD, PTSD, Office of Environmental Health Hazard Assessment (OEHHA), State Water Resources Control Board (SWRCB), and Department of Toxic Substances Control (DTSC) is finalizing a report entitled "Environmental Impact Assessment of Selected Halogenated Chemicals" that evaluated VOC exemption petitions for a total of nine chemicals, which were petitioned for VOC exemption from California Consumer Products Regulations.

RD staff is managing, with SSD staff input, another architectural coatings project, entitled “Development of an Improved VOC Analysis Method for Architectural Coatings.” RD and SSD staff are also involved with research sponsored by the Eastman Chemical Company to study the emissions of Texanol® from architectural coatings. RD and SSD staff are also participating in a three-year industry-agency research project being conducted by UC Riverside entitled “Paint and Coatings Environmental Study,” or PACES.

RD staff and SSD staff attended meetings and continued to assist with development of an Environmentally Preferable Products (EPP) purchasing manual and to review and

recommend product specifications for State procurement as part of the Governor's Green Action Team's EPP Task Force. RD and SSD staff additionally reviewed and commented on several standards of the Green Seal (GS) and Green Guard Programs, voluntary product certification and labeling programs. SSD staff participated, as an elected stakeholder member representing the government sector, in the standard development team for revisions to GS-37 Environmental Standard for Industrial and Institutional Cleaners and additionally coordinated the review and comment on this standard by members of the EPP Task Force and several other State agencies.

ARB participated on the Leadership Council for the California Green Chemistry Initiative which seeks to establish the blueprint for keeping California in the forefront of protecting health and the environment in a robust economy through the advancement of green chemistry. SSD staff participated on several teams working to identify existing programs governing the management of toxic chemicals, identify additional State agency needs with respect to a comprehensive chemicals policy, and assess and evaluate comments received from external stakeholders.

RD staff also participated in consumer products workshops with agendas that included reactivity issues, and provided technical support for exploration of reactivity-based VOC control measures for aerosol coatings, consumer products, automotive refinishing products, and architectural coatings.

Planning and Technical Support

SSD staff worked with PTSD staff on the development of a future consumer products survey for 2006 calendar sales and VOC emissions. SSD staff continued to review and evaluate manufacturers' requests for revisions to information submitted for the 2003 Consumer Products and Commercial Products Survey. Where applicable, the revised emissions were used for fee determinations.

Rule Development and District Oversight

SSD staff with the assistance and input of ED staff continued to evaluate the 2003 Consumer and Commercial Products Survey (2003 Survey), the most comprehensive survey conducted by ARB staff to date covering about 250 consumer product categories. Over 940 responding companies provided sales and VOC content information for over 26,000 products. Staff review and evaluation of the 2003 Survey continued into FY 2006-2007 which lead to a new rulemaking effort, the 2006 Consumer Products Regulation Amendments. The 2003 Survey was used to identify categories where VOC emission reductions can be obtained to meet current SIP control measure commitments, update the statewide emissions inventory, and develop new commitments for future SIPs.

As part of the 2006 Consumer Products Regulation Amendments rulemaking process, SSD staff prepared and posted lists of proposed product categories, staff proposals for VOC limits for various product categories, definitions of the proposed product categories, sample compliance formulas for the proposed product categories, and conducted economic impact analyses.

Staff also conducted several Consumer Products Workgroup meetings. Staff's proposals for 15 product categories were presented to the Board, and approved, on November 17, 2006 with modifications. SSD staff prepared the documents required to complete the rulemaking process, including a 15 day public comment period notice for the approved modifications and developed responses to comments received on the 2006 rulemaking for a Final Statement of Reasons. Staff worked on additional rulemaking proposals to be presented to the Board in 2008.

SSD staff also developed a 2006 Consumer and Commercial Products Survey (2006 Survey), which includes surveying for aerosol coating products. The 2006 Survey will be used in future rulemaking efforts to identify categories where VOC emission reductions, either on a mass basis or reactivity basis, can be obtained to meet current SIP control measure commitments, update the statewide emissions inventory, and develop new commitments for future SIPs.

Staff conducted technical assessments of consumer product categories which became effective at the end of 2006 and conducted a halogenated solvent use survey; staff continued to evaluate data received from the 2003 Aerosol Adhesives Survey.

Staff reviewed and evaluated requests and applications for product determinations; charcoal lighter material certifications; alternative control plans and annual reports; and innovative product exemptions. These activities often involved coordination and the concurrence of staff from ED, MLD, PTSD, and OLA. SSD staff, working with ASD and PTSD staff, prepared and reviewed fee emission determinations for consumer products manufacturers.

Staff responded informally and formally to numerous inquiries from manufacturers, consultants, product certification/labeling programs, and other regulatory agencies (including federal, local, and other states' air quality management/air pollution control agencies and from other countries, including Hong Kong). Staff made presentations at several national and regional industry association meetings.

In FY 2006-2007, SSD staff continued work on its 2005 survey of architectural coatings sold into California and published a draft survey report in September 2006. Work on the survey continued into FY 2006-2007, and it was used to update the statewide architectural coatings emissions inventory and to revise the 2000 SCM. Close to 200 responding companies have provided sales and VOC content information for over 20,000 products. In January 2007, staff published a draft reactivity analysis based on the 2005 survey data. SSD staff also worked with ASD and PTSD staff to review fee emission determinations. In addition, SSD staff developed a revised methodology to account for the thinning and clean up emissions associated with the use of architectural coatings.

SSD staff also assisted the air districts with regard to architectural coatings by: working on updating the 2000 SCM by analyzing survey data, performing technology assessments, drafting SCM language, publishing lists of complying products, conducting an economic impacts survey, drafting a staff report, and conducting three

public workshops, multiple district and industry work group meetings, and many meetings with industry representatives; working with California Polytechnic State University (Cal Poly), San Luis Obispo on the architectural coatings research project entitled “Development of an Improved VOC Analysis Method for Architectural Coatings;” working on a settlement for a statewide violation of local architectural coatings rules; assisting districts with rule development; and conducting product determinations.

General Division Activities for Nonvehicular Sources

During FY 2006-2007, ARB used the fees collected from nonvehicular sources to develop and enforce emission reduction strategies for nonvehicular sources. In addition, ARB used the fees to develop the technical information and air quality plans necessary to address these sources.

Enforcement: These activities include conducting inspections of stationary sources, investigating complaints, issuing notices of violations, evaluating district variances for compliance with regulatory requirements, obtaining and analyzing evidence to determine the date of onset, cause, and extent of violation of air pollution regulations, and reviewing district rules for enforceability.

Monitoring and Laboratory: These activities include measuring ambient air levels of gaseous and particulate criteria and toxic air pollutants. These efforts are used in determining which areas of the State are nonattainment for the State and federal ambient air quality standards. They are used for statewide ambient air toxic monitoring to facilitate the identification of and control of toxic air contaminants in California.

Research: These activities include investigating the reactivity of air pollutants and the atmospheric processes that contribute to ozone and particulate matter formation, conducting vulnerable populations and children’s health studies, and reviewing/updating ambient air quality standards based on research results.

Planning and Technical Support: These activities include maintaining and updating emission inventories, conducting air quality modeling to determine the population exposure to ozone and particulate matter, and developing and implementing air quality plans for ozone and particulate matter.

Rule Development and District Oversight: These activities include managing a database of Best Available Control Technologies (BACT) to facilitate the transfer of technologies among districts facing growth from similar sources, helping districts comply with federal permit requirements, developing area wide emission inventories to better target district resources, providing guidance and technical resources to evaluate feasibility and effectiveness of regulatory actions, developing suggested control measures to assist districts in developing regulations, and evaluating, developing and implementing regulatory measures to reduce emissions.

Status of Efforts to Address Priority Activities

In addition, H&SC section 39612(c) gives priority for expenditure of nonvehicular source fees to five specified activities. ARB's efforts to address these activities are summarized below.

1. Identifying air quality-related indicators that may be used to measure or estimate progress in the attainment of State ambient air quality standards

H&SC section 39607(f) requires that ARB, in consultation with districts, evaluate air quality indicators that can be used to measure progress towards attainment of State standards. By July 1993, ARB was required to identify one or more indicators to be used by districts in assessing progress in their triennial State attainment plan updates required under H&SC section 40924.

In 1993, ARB developed three air quality indicators for districts to use in assessing progress toward State standards in their triennial plans. The first is the expected peak day concentration, which is also termed the peak indicator. This indicator tracks progress at locations where concentrations are the highest; these are also the locations where the potential for acute health effects are the greatest. The other two indicators, population-weighted exposure and area-weighted exposure, indicate the potential for chronic health effects. In contrast to the peak indicator, which is based on data for peak exposures at individual monitors, the two exposure indicators are based on data for all monitors and reflect the "average" exposures within a district. The population-weighted exposure indicator represents the average of all personal exposures in the area, while the area-weighted exposure indicator represents the average exposure across all locations in the area.

ARB published the indicators in July 1993, and in September 1993 published a guidance document for how to use these indicators in assessing progress; this report is titled "Guidance for Using Air Quality-Related Indicators in Reporting Progress in Attaining the State Ambient Air Quality Standards." Since then, districts have used these indicators in assessing progress in their State ozone triennial plan updates. Every three years, ARB calculates and provides the indicators to each of the districts for use in assessing progress made over the last three years toward attainment of the State ozone standard and for incorporation in their triennial plan updates. ARB last provided updated indicators to districts in September 2006 for their 2007 plan updates.

All three indicators have been provided for the State 1-hour average ozone standard. The Board reviewed the ozone standard in 2005. As a result of this review, the Board retained the 1-hour standard and adopted an 8-hour standard of 0.070 parts per million, designed to protect the public from chronic exposure. As a result of the new 8-hour average ozone standard, ARB now provides the 8-hr ozone peak indicator and population-weighted exposure indicators, in addition to the 1-hr ozone indicators (peak exposure, area-weighted exposure, and population- weighted exposure).

In June 2007, ARB also published the "California Almanac of Emissions and Air Quality, 2007 edition (the Almanac). This document represents a comprehensive assessment of

progress toward State standards from a statewide, as well as a regional perspective, over a twenty-year period. The Almanac includes numerous air quality statistics, updates the attainment status for State standards, and includes maps, graphs, and numerous data tables to illustrate progress. The peak indicator is provided for four pollutants (ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide) for all air districts and air basins in California. In addition, 1 and 8-hour average ozone population-weighted exposure estimates are provided for California's five largest urban areas. The 2007 Almanac also includes statewide maps and characterization of how the number of unhealthy days above the State 8-hour average ozone and PM10 standards compares in different regions of California. ARB has also developed a new indicator, air quality contour maps designed to assess spatial ozone air quality progress within an air basin or nonattainment area. These maps use monitoring data to estimate how ozone air quality differs across an air basin or county. These maps are helpful in evaluating how air quality has changed spatially in an area over time. These maps have been published in the 2007 Almanac and State Implementation Plan documents, discussed at community meetings, and presented in the annual "State of the State's Air Quality" presentation to the Air Resources Board.

Finally, ARB staff also developed and maintains a real-time air quality database, which is an important tool that allows the public and districts to continually track and measure progress.

H&SC section 39607(f) also requires that ARB continue to evaluate the prospective application of air quality indicators, and upon a finding that adequate air quality modeling capability exists, identify indicators which may be used by districts in lieu of the annual five percent emission reductions mandated by H&SC section 40914(a). Prospective indicators have not yet been developed because adequate air quality modeling capability for this application does not yet exist. However, ARB staff is continually evaluating and improving the models. Currently, ARB, in conjunction with some districts,has developed and applied state of the art modeling tools in the attainment demonstrations for the federal ozone and PM 2.5 air quality standards. It is expected that the additional information from this effort may contribute to further understanding of prospective air quality indicators

2. Establishing a uniform methodology for assessing population exposure to air pollutants

H&SC section 39607(g) required that, by July 1996, ARB establish a uniform method for use by districts in assessing population exposure to air pollution at levels above the standards. As discussed above, ARB established a population-weighted exposure indicator, which was documented in a 1993 report entitled "Guidance for Using Air Quality-Related Indicators in Reporting Progress in Attaining the State Ambient Air Quality Standards." ARB reports population-weighted exposure information to the districts for use in their triennial progress assessments and plan updates, and publishes population-weighted exposure to ozone for five air basins as part of the annual Almanac of Emissions and Air Quality. As shown in the 2007 edition of the Almanac, from 1990 to 2005 population exposure to unhealthy ozone levels above the State 8-hr ozone

standard has been reduced by an average of 60 percent in the five most populated air basins.

3. Updating the emission inventory pursuant to section 39607.3, including emissions that cause or contribute to the nonattainment of federal ambient air quality standards

ARB compiles, maintains, and is constantly working to improve a very detailed and complex inventory of air pollution sources. Emission inventory improvement is an integral part of ARB's air quality planning and regulatory development processes. It is also an important ARB research category. Pursuant to H&SC section 39607.3, ARB staff periodically updates the inventory and brings it to the Board for approval either as a stand-alone item or as part of the Board's approval of air quality plans. ARB also publishes the inventory for all California air basins annually as part of the Almanac. In FY 2006-2007, some of the major activities ARB completed related to emissions inventories include the following:

Preparation of Ozone and PM2.5 SIPs - ARB is directed by federal law to prepare a State Implementation Plan (SIP) for the attainment of ambient air quality standards. SIPs for a number of areas in the State, including the South Coast Air Quality Management District (SCAQMD) and the San Joaquin Valley Air Pollution Control District (SJVAPCD), are being prepared pursuant to federal law, and are due to the U.S. EPA in 2007 and 2008. To prepare for the SIPs, ARB continues to perform extensive air quality modeling using its emission inventory. ARB continues to work with districts to perform quality assurance on the emission inventory that will be used for the modeling. This quality assurance program includes special emphasis on verification of local data for point sources, verification of emissions from large power plants, and on verification and correction of stack data. Weekly meetings were held with SCAQMD staff and with SJVAPCD staff to discuss inventory and modeling needs for the SIPs. Improvements to the ARB's methodologies for estimating area source emissions are continually being refined. Efforts to improve methods of forecasting future year emissions using economic and demographic growth factors are in progress. Control factors that are based on enforceable regulations that result in emission reductions are regularly reviewed. The California Emission Forecasting System (CEFS) requires control profiles that are rule-process specific. The implementation of this control data requirement is an ongoing relational exchange between State and district partners.

Based on recommendations from the National Academy of Sciences, the U.S. EPA requires the inclusion of additional analyses to corroborate air quality modeling for the PM2.5 and 8-hour ozone standards. These corroborative analyses are intended to strengthen the technical foundation for the SIP. As a result, the ARB carried out a series of analyses intended to satisfy this requirement. These analyses relied on the extensive monitoring data routinely collected by the ARB and the districts, as well as the ARB's emission inventory. Specifically, these analyses compared trends in air quality and emissions for PM2.5, ozone and their precursors, examined methodologies to account for year-to-year variations in meteorology and their effects on air quality, and conducted supplemental source apportionment modeling for PM2.5 to better understand

the sources contributing to PM2.5 in each region. The results of these studies will be an integral part of ARB's SIP submittals.

In recognition of the regional nature of air quality problems throughout the State, the ARB has completed its migration towards the use of two large modeling domains to address all of the 8-hour ozone and PM2.5 non-attainment areas in the State. Previously, several smaller modeling domains were used to assess air quality impacts. This transition has required the development and quality assurance of meteorological and emission inventory inputs for large regions, as well as development of procedures to quality assure and evaluate of modeling inputs for periods ranging up to a complete year.

Emission Inventory Enhancements - ARB made major revisions to its motor vehicle emission estimation models. The EMFAC2007 and OFFROAD2007 models were released to support the inherent needs of the 8-hour ozone and PM2.5 SIP efforts. ARB staff also worked on updating emission estimates for several areawide source categories. During fiscal year 2006-2007, statewide emission estimates were updated for several Industrial Coating/Solvent categories. Also, the ARB developed default methodologies for the San Joaquin Valley air basin for the Forest Management, Agricultural Burning, and Other Burning categories.

Training for District Staff - ARB has provided training and guidance for district emission inventory staff. In FY 2006-2007, training by ARB included an educational workshop on emission inventory development, one-on-one focus sessions on the California Emission Forecasting System (CEFS) data requirements, and ongoing training on the "Hot Spots" Analysis and Reporting Program, a computer software package that performs database and risk assessment functions. ARB also hosts bimonthly Emission Inventory Technical Advisory Committee meetings to keep districts informed on its emission inventory program.

Web Accessibility - ARB has developed web-based tools that give districts direct access to their emission inventory data. Extensive emission inventory reference and documentation is available on the ARB website for those who are creating and/or using emission inventories. ARB has also created a number of web tools that allow districts and the general public to summarize emission inventory data in a number of ways. In FY 2006-2007, ARB developed a special internal web site to assist District and ARB planners and modelers in the development of the SIP. This web site offers several tools for summarizing emissions data. Separate tools were developed for summarizing seasonal average emissions used for planning and month/day-specific emissions used for modeling. The planning tool offers a "drill-down" feature that enables the end-user to retrieve detailed information by simply clicking on a major summary category. This provides the necessary detail for developing and assessing control strategy options. The emissions information can be easily downloaded for later manipulation. The web site also provides a version control chronology that provides planners and modelers with a quick reference guide for tracking specific inventory products used in the SIP process. This suite of tools has enabled fast-response reporting and emissions analysis greatly enhancing the efficiency of the SIP process.

4. Identifying, assessing, and mitigating the effects of interbasin transport of air pollutants

H&SC section 39610 directs ARB to assess ozone transport, defined as the contribution of ozone and ozone precursors in upwind regions on ozone concentrations that violate the State ozone standard in downwind regions. ARB is specifically directed to (1) identify district transport couples, (2) assess the relative contribution of upwind emissions on downwind ozone concentrations, and (3) establish mitigation requirements commensurate with the level of contribution. Further, ARB through its mobile source emission control program provides the majority of emission reductions in both upwind and downwind regions, thereby providing the bulk of interbasin transport mitigation.

Assessments of Transport Couples - Since 1989, ARB has published several assessments of transport relationships between air basins and regions in California. The assessments identify transport couples consisting of an upwind area (source of transported emissions) and a corresponding downwind area (receptor of transported emissions). ARB also evaluates the magnitude of the contribution and determines whether the contribution is overwhelming, significant, inconsequential, or a combination thereof. ARB first identified transport couples in 1989 and 1990 and updated these assessments in 1993, 1996, and 2001. ARB reviews air quality data every three years and proposes changes to the transport identification regulation, when warranted by the data. ARB also uses air quality models to account for transport in the development of air quality plans.

ARB adopted transport mitigation regulations for the districts in 1990 and amended them in 1993 and 2003. The 1990 regulations established mitigation requirements for upwind areas found to have either overwhelming or significant impacts on downwind areas. The primary mitigation requirement was application of best available retrofit control technology. In 1993, ARB amended the mitigation requirements to align them with the minimum permitting requirements of State law. In May 2003, ARB adopted amendments that strengthened the mitigation requirements to include a requirement that upwind districts adopt all feasible measures for the ozone-forming pollutants, independent of the upwind district's attainment status. In addition, they include a requirement that "no net increase" thresholds for new source review permitting programs in upwind areas be as stringent as those in downwind districts.

Transport Impacts – Beginning in the late 1990's with the Southern California Ozone Study (SCOS) and followed in the early 2000's by the Central California Ozone Study (CCOS) programs, the State was split into two modeling domains, one for Southern California and one for Northern and Central California, respectively. Transport relationships between air districts within these large domains are implicitly captured within photochemical models. This is the mechanism ARB uses in its oversight role to ensure transport impacts on downwind areas are addressed for purposes of both State and federal air quality standards. Modeling attainment demonstrations take into account the shared responsibility for reducing emissions in regions where air pollution transport can at times be significant.

Mitigation Measures – A number of local air districts are currently updating their local control strategies for the State Implementation Plans (SIPs) for ozone and fine particulate matter (PM2.5) that are required by the federal Clean Air Act. In addition, some of these districts are also developing triennial updates to local air quality attainment plans required by the California Clean Air Act to meet the State one-hour standard for ozone. ARB staff is working closely with local air district staff as they develop the required local source control strategies. To economize on these two planning efforts, some local districts are incorporating their work on the triennial updates with their portion of the SIP. A key element of ARB's assistance is to ensure that local air districts comply with the requirements for mitigation of transported air pollution. ARB's contribution to that effort is the development of new mobile source control strategies.

5. Developing new State Implementation Plan Strategies

During the past fiscal year, ARB has been updating its control program with new strategies as part of the planning effort for attaining the federal 8-hour ozone and the PM2.5 standards. The State Implementation Plans (SIPs) for ozone are due to the U.S. Environmental Protection Agency (U.S. EPA) in 2007, while PM2.5 SIPs are due April 2008. The control strategies for the federal SIPs will also ensure progress toward achieving the State standards.

ARB has been working closely with the local air districts to develop a comprehensive control strategy that is designed to address the needs of each nonattainment area in California. These State and local control measures will provide substantial new and cost- effective emission reductions beyond those provided by existing programs. In June, 2007, ARB adopted the local air quality attainment plan for the San Joaquin Valley, and in September, 2007, ARB adopted its comprehensive State control strategies along with the local air quality attainment plan for the South Coast Air Basin.

The effort to update the State strategy is multifaceted. It includes updating the State's database of stationary, areawide, and mobile emission sources. Updated emission inventories from these sources have been used as inputs to computer models that simulate the formation and dispersion of pollutants in the atmosphere to estimate the needed emission reductions or "targets" for meeting air quality standards within the required timeframe. Finally, control concepts are being developed that along with engineering analyses enable the quantification of potential emission reductions.