2017 Annual Report to the Governor and Legislature on the California Air Resources Board's Expenditure of Fees on Nonvehicular Sources, Consumer Products, and Architectural Coatings for Fiscal Year 2016-2017

Document Availability

Electronic copies of this report can be obtained at:
http://www.arb.ca.gov/mandrpts/mandrpts.htm

To request a hardcopy, please contact Dr. David Ernest García, Legislative Director at (916) 322-8520, or david.garcia@arb.ca.gov

2017 Annual Report to the Governor and Legislature on the California Air Resources Board's Expenditure of Nonvehicular Source, Consumer Product, and Architectural Coating Fees for Fiscal Year 2016-2017

Introduction

The California Clean Air Act, Assembly Bill (AB) 2595 (Sher, Chapter 1568, Statutes of 1988), requires attainment of State ambient air quality standards by the earliest practicable date (Health and Safety Code Section 41503.5). As part of that mandate, the California Air Resources Board (CARB or the Board) and the local air quality management and air pollution control districts (air districts) are directed to reduce air pollution from motor vehicles, industrial facilities, and other sources of emissions. CARB has primary responsibility for control of air pollution from vehicular sources and consumer products, while air districts generally have primary responsibility for control of nonvehicular sources of pollution, such as stationary sources (Health and Safety Code Section 39002).

One type of pollution subject to ambient air quality standards is volatile organic compounds (VOCs), which contribute to the formation of ground-level ozone and can result in adverse health impacts. The California Clean Air Act requires CARB to adopt regulations to achieve the "maximum feasible reduction in VOCs emitted by consumer products" (Health and Safety Code Section 41712(b)) and authorizes CARB to recommend "control measures" to air districts to achieve feasible reductions in VOC emissions related to architectural paints or coatings (Health and Safety Code Section 40916(d)(1)).

Health and Safety Code Sections 39612 and 39613 further authorize CARB to assess fees on stationary sources and manufacturers of consumer products and architectural coatings (collectively, "nonvehicular sources") in order to recover the costs of CARB programs related to these sources.[1] These fees are collectively described by the name of the legislation that established them, AB 10X (Oropeza, Chapter 1, Statutes of 2003), as "AB 10X fees." The facilities subject to the nonvehicular fees are those authorized by the air pollution control and air quality management districts to emit 250 tons or more annually of any nonattainment pollutant or precursor, as provided in Health and Safety Code Section 39612(d). The fees for consumer products and architectural coatings apply to manufacturers with total California sales that result in 250 tons per year or more of VOC emissions in the State (Health and Safety Code Section 39613).

[1] Health and Safety Code Section 39612 authorizes CARB to impose permit fees on nonvehicular sources, which "shall be expended only for the purposes of recovering costs of additional state programs related to nonvehicular sources." Health and Safety Code Section 39613 requires CARB to impose a fee for consumer products and architectural coatings sold in California, which "shall be used to mitigate or reduce air pollution in the state created by consumer products and architectural coatings, as determined by the state board, and shall be expended solely for those programs."

Section 39612(g) of the Health and Safety Code also requires CARB to report to the Governor and the Legislature annually on the expenditure of the fees collected, which is the topic of this report. For fiscal year 2016-2017, CARB staff collected approximately $20.6 million in consumer products, architectural coatings, and stationary source fees to partially fund program expenditures. This report provides information on program activities that were funded by fiscal year 2016-2017 fees authorized by Health and Safety Code Sections 39612 and 39613.

Fiscal Year 2016-2017 Fee Collections

Total fees collected in a given fiscal year reflect a base fee amount of $17.4 million collected from architectural coatings and consumer product manufacturers, and stationary sources, plus a $2.6 million supplemental fee assessed on stationary sources only, pursuant to the Nonvehicular Source, Consumer Products, and Architectural Coatings Fee Regulations (California Code of Regulations, title 17, Sections 90800.8-90806) (hereinafter "Fee Regulation").

Fees collected incorporate two additional adjustments. The first is a three percent increase in the base fee amount to allow for recovery of unforeseen reductions in funds collected due to business closures and bankruptcies (Fee Regulation, Section 90800.8(c)(2)). CARB staff has determined from experience that this three percent upward adjustment is needed to account for this potential collection shortfall. Secondly, a carry-over balance from the previous fiscal year typically occurs due to business closures and bankruptcies, loss of fee payers when emissions fall below applicable thresholds, addition of newly identified fee payers, or other factors. Any excess funds collected are carried over to reduce the total fee determinations for the next fiscal year. Similarly, any amount of funds under-collected will be added to increase the total fee determinations for the next fiscal year (Fee Regulation, Section 90800.8(d)).

Fiscal Year 2016-2017 Fee Determinations. Each manufacturer of consumer products or architectural coatings with more than 250 tons per year of VOC emissions in 2014 was subject to an AB 10X fee on each ton of VOC emissions. The $17.4 million base fee for consumer products, architectural coatings, and stationary sources, adjusted as described above, was divided by the total VOC emissions (and, for stationary sources, other nonattainment pollutant and their precursor emissions) subject to the fee to determine the dollar per ton fee rate for the fiscal year. This is an iterative process in which CARB provides each fee payer with its preliminary fee amount and calculation methodology, with an opportunity for fee payer input before the fee is finalized (as described below). The final base fee rate for fiscal year 2016-2017 was $179.25/ton of emissions for all fee payers. An additional supplemental fee of approximately $90 per ton was assessed on stationary sources. Table 1 below identifies the total fees paid by stationary sources and consumer product and architectural coatings manufacturers in fiscal year 2016-2017.

Table 1:

Fees Collected for Fiscal Year 2016-2017

Activities	Fees Collected
Facilities	$10,898,692
Consumer Products and Architectural Coatings	$9,753,709
Total Collected	**$20,652,401**

CARB determined each individual fee payer's fiscal year 2016-2017 preliminary fee amount, and provided an opportunity for fee payer and air district feedback. CARB's protocol for soliciting feedback and finalizing each party's fiscal year 2016-2017 AB 10X fees, as required by Section 90800.8(c) of the Fee Regulation, is described below:

1. Preliminary Fee Determination: By May 1, 2016, CARB sent stationary source and consumer product or architectural coatings manufacturers a letter indicating their preliminary fee and fee calculation methodology pursuant to Section 90800.8(c)(6) of the Fee Regulation Fee. Each air district that has a stationary source subject to the fee also receives a letter indicating each of its source's preliminary fees and fee calculation methodology.
2. Stakeholder Feedback: Each letter recipient had sixty days to provide written comments to CARB regarding their preliminary fees and fee calculation methodology. Stakeholder comments typically involve refining of estimated emissions subject to fees.
3. Final Fee Determination: By August 1, 2016, CARB provided each stationary facility and consumer product or architectural coatings manufacturer with its final fee determination letter. Each air district with a stationary facility subject to the fee also received a final fee determination letter.

Additional information and details regarding fiscal year 2016-2017 fee payers, and emission and fee determination methodologies for can be found at: www.arb.ca.gov/consprod/regact/feewg/feewg.htm and www.arb.ca.gov/ei/nscpac_fees/nscpac_fees.htm.

Major Activities Supported by the Fees

The federal Clean Air Act (42 U.S.C. sec. 7401 et seq.), administered by the United States Environmental Protection Agency (U.S. EPA), sets national ambient air quality standards. In order to demonstrate attainment of federal air quality standards, CARB must develop, maintain and update emission inventories; evaluate air quality trends and indicators; conduct sophisticated air quality modeling; and work with air districts to develop Air Quality Management Plans and State Implementation Plans (SIPs), that

commit to achievement of emission reductions needed to demonstrate attainment. The planning effort culminates with adoption of State and local measures.

AB 10X fees are used to help implement these and other requirements related to attainment of State and federal air quality standards for the nonattainment pollutants emitted by the fee payers. The success of these and other efforts is evident in the air quality progress seen across the State. Today, more than 20 million people live in communities with air quality that meets current federal standards. This improved air quality provides significant health and economic benefits, including fewer premature deaths for people with preexisting heart and lung disease; reduced hospital admissions; and reduced emergency room visits.

AB 10X fees are also used to help fund implementation of CARB's stationary source, consumer product and architectural coatings programs. This report provides an overview of these and other key CARB programs that received AB 10X funding in fiscal year 2016-2017.

Program Implementation

Nonvehicular Sources. The California Clean Air Act requires air districts in nonattainment for State air quality standards to adopt reasonably available control technology (RACT) and best available retrofit control technology (BARCT) rules to reduce emissions from existing stationary sources (Health and Safety Code Section 40918 et seq.). While the California Clean Air Act does not define RACT, for existing sources RACT is generally considered to be those emission limits that would result from the application of demonstrated technology to reduce emissions. BARCT is defined in the Health and Safety Code Section 40406 as "an emission limitation that is based on the maximum degree of reduction achievable, taking into account environmental, energy, and economic impacts by each class or category of source." California Health and Safety Code Section 40918(a)(2) requires nonattainment areas that are classified as moderate for the State ozone standard to include in their attainment plan the use of RACT for all existing stationary sources, and BARCT for existing stationary sources permitted to emit 5 tons or more per day or 250 tons or more per year of nonattainment pollutants or their precursors. This requirement applies to the extent necessary to achieve standards by the earliest practicable date.

Since enactment of the California Clean Air Act in 1988, CARB has developed stationary source control measures for direct administration by CARB or for adoption and implementation by air districts. CARB's RACT/BARCT determinations aid air districts in developing regulations to attain and maintain the state ambient air quality standards. The RACT/BARCT determinations also have incorporated metrics of cost-effectiveness in selecting appropriate levels of emission control, and promote consistency of controls for similar emission sources among air districts with the same air quality attainment designations.

CARB and the California Air Pollution Control Officers Association also maintain technical evaluation documents and a database of BACT decisions for use in the

permitting of new stationary sources. This clearinghouse identifies source categories and the most stringent performance standards adopted by air districts, as well as information on the most stringent PM regulations adopted by CARB and air districts for a spectrum of stationary, area, and mobile source categories. These control equipment and emission limit specifications serve as the basis for identifying the next round of cost-effective stationary source regulations to be considered by air districts when air quality plans are developed to meet State air quality standards. These requirements are periodically updated through the collaborative efforts of CARB and air districts via the rule review process, including analyses of cost-effectiveness and emission reduction potential for current emission control technologies. For more information on CARB's RACT/BARCT technical evaluations, visit: www.arb.ca.gov/ractbarc/ractbarc.htm or http://www.arb.ca.gov/bact/docs/ssrcalifornia.htm.

Consumer Products. Chemically formulated consumer products such as personal care products, household care products, and automotive care products are a significant source of VOC emissions and have been regulated as a source of VOC in numerous rulemakings since 1989. Consumer products are one of the largest source categories of VOC emissions in the South Coast and Statewide.[2] The magnitude of emissions from this sector indicates that additional approaches to reduce emissions from this sector remain important.

In fiscal year 2016-2017, CARB staff continued implementation of flexibility provisions within the consumer product regulations geared to drive development of innovative, lower-emitting consumer products.[4] CARB's Alternative Control Plan (ACP) Regulation for Consumer Products and Aerosol Coating Products (California Code of Regulations, title 17, Sections 94540 – 94555) provides participating manufacturers with regulatory flexibility by allowing a product with VOC content above the VOC standard to be offset by a product with emissions below the standard. There are currently four companies with active ACPs, four inactive ACPs, and one cancelled ACP for a total of nine companies who have participated in the program. CARB's Innovative Product Exemption (IPE) provisions, on the other hand, allow for a product that exceeds the applicable VOC

Nonvehicular Source Emissions. CARB and local air district regulations have helped significantly drive down smog-forming emissions from stationary sources, consumer products, and architectural coatings in California. However, emissions from nonvehicular sources have declined less rapidly than those from mobile sources, and are projected to increase in the years ahead as mobile source emissions continue to decline.[3] California will need additional technological advances and innovative strategies to further reduce consumer product, architectural coatings, and stationary source emissions to meet State and federal air quality standards as California's population continues to grow.

[2] California Air Resources Board; *Revised Proposed 2016 State Strategy for the State Implementation Plan*; March 7, 2017; https://www.arb.ca.gov/planning/sip/2016sip/rev2016statesip.pdf .
[3] California Air Resources Board; CEPAM: 2016 SIP - Standard Emission Tool; Emission Projections By Summary Category; https://www.arb.ca.gov/app/emsinv/fcemssumcat/fcemssumcat2016.php.
[4] California's consumer product regulations are comprised of: California Code of Regulations, title 17, Sections 94500-94506.5, 94507-94517, 94700-94701, and 94540-94555.

limit, yet results in less VOC emissions compared to a "representative consumer product" of the same product category (California Code of Regulations, title 17, Section 94511). Such a product may result in lower emissions than a representative product due to special features such as a more efficient application technique, a greater percentage of active ingredients, or more effective active ingredients. There are currently 52 IPEs, primarily for hair spray and air freshener products. Both the ACP and IPE programs provide manufacturer flexibility, while encouraging innovation to develop products that emit significantly lower VOC than currently required.

CARB also continued to respond to manufacturer requests for product determinations and charcoal lighter material certification applications. Manufacturers often request an official CARB product determination for products with multiple, vague, or unclear potential uses in order to clarify how the product is defined for regulatory purposes, and the applicable VOC limit. CARB consumer product implementation, enforcement, legal, and laboratory personnel evaluate the product label, formulation, and applicable regulatory definitions in making these determinations. CARB also annually certifies dozens of charcoal lighter materials, including lighter fluids and charcoal briquettes, to ensure these products meet the applicable VOC emissions per start standard pursuant to California Code of Regulations, title 17, Section 94509(h).

CARB staff also works closely with manufacturers, consultants, research institutions, and other regulatory agencies, such as the U.S. EPA, the California Department of Toxics Substances Control (DTSC), and California air districts to drive development and implementation of effective, health-protective consumer products regulations. For example, as part of CARB's participation in the Leadership Council for the California Green Chemistry Initiative, staff continued to coordinate with DTSC on its work on Safer Consumer Products Alternatives regulations. The Safer Consumer Products program strives to reduce harmful chemicals in products used by consumers in California.

Finally, in fiscal year 2016-2017, CARB staff continued implementing the Consumer and Commercial Products Survey (Survey) for calendar years 2013, 2014, and 2015. As part of the Survey, companies were required to submit sales, labels, and detailed formulations for all consumer products sold in California. In total, about 300,000 products sold in California during these three calendar years were reported to CARB by over 1,500 product manufacturers and formulators.

In fiscal year 2016-2017, CARB staff assisted product manufacturers and formulators – including many small companies – complete the Survey with on-line data submittals. Manufacturer on-line reporting of products sold in 2015 occurred between July 1, 2016 and November 1, 2016. In order to focus and streamline survey data reporting requirements, CARB staff exempted 231 categories with less than 0.05 tons per day of emissions from 2015 reporting. This concluded the data reporting timeframe of the three year survey. For more information regarding the 2013, 2014, and 2015 consumer product surveys, visit: https://www.arb.ca.gov/consprod/survey/survey.htm. Data derived from this survey

will be used to update the consumer products VOC emission inventory and will provide the technical foundation for future rulemaking efforts.

Architectural Coatings. Architectural coatings are products, such as house paints, stains, industrial maintenance coatings, and traffic coatings that are applied to stationary structures and their accessories. VOCs are emitted from the coatings and from solvents that are used for thinning and clean-up. Control of VOC emissions from architectural coatings is primarily the responsibility of the air districts, with CARB serving as an oversight agency and providing assistance to the air districts, such as development of architectural coatings suggested control measures (SCM). CARB also conducts surveys of architectural coatings product sales and formulations to estimate emissions and air quality impacts from this source category.

During fiscal year 2016-2017, CARB staff implemented a survey of architectural coatings sold in California in the 2013 calendar year. CARB staff assisted a diversity of architectural coatings companies and product formulators in completing the 2014 survey, and reviewed the submitted survey data for accuracy and completeness. The information collected in the survey will be used to help CARB track the VOC emitted by the use of architectural coatings in California, and to ensure future regulations are based upon the latest product formulations. CARB has also provided regulatory and policy guidance to air districts through the development and implementation of a Suggested Control Measure for Architectural Coatings that was first adopted in 1977, and was amended in 1985, 1989, 2000, and 2007. The 2014 survey data will be used to inform a potential update to the 2007 Suggested Control Measure for Architectural Coatings. For more information on the both the architectural coatings surveys, visit: https://ww2.arb.ca.gov/our-work/programs/coatings/architectural-coatings/surveys/2014-architectural-coatings-survey.

Research

CARB conducts research to improve understanding of the causes and effects of air pollution, enabling staff to identify emerging air quality challenges and develop cost-effective, science-based strategies for reducing air pollution and protecting public health. This research supports intelligent and efficient implementation of CARB's stationary source, consumer products and architectural coatings programs by identifying potential health and atmospheric impacts of common air pollutants. In addition, CARB research evaluating the interaction between criteria pollutants, greenhouse gases, and air toxics enables CARB to maximize co-benefits of regulations that target a diversity of pollutants.

Below are some examples of VOC-related research projects conducted or funded by CARB in fiscal year 2016-2017:

- Investigators at Lawrence Berkeley National Laboratory assessed formaldehyde emissions from residential central air fiberglass filters relative to synthetic air filters and estimated their contributions to indoor concentrations in California homes. The

contract was initiated in August 2014, and is expected to be completed in February 2018.

- CARB staff conducted an in-house study to measure formaldehyde concentrations in 97 occupied mobile (a.k.a. manufactured) homes in California. This study started in August 2014, and is expected to be concluded in the Fall of 2018. The study results show that while formaldehyde levels in California mobile homes are much lower than they were several decades ago, levels are still higher than in other indoor environments and largely exceed California health-based guideline levels. A manuscript will be submitted to "Indoor Air" for publication.

- University of California - Davis, in collaboration with the California Institute of Technology, conducted a study entitled "Improving Chemical Mechanisms for Ozone and Secondary Organic Carbon" between February 2013 and March 2017. Two primary objectives of this study were to: 1) extend the Statewide Air Pollution Research Center chemical mechanisms to allow for prediction of secondary organic aerosol (and ultimately, fine particulate matter) formation; and 2) refine our understanding of the reactivity (and therefore ozone forming potential) of a diversity of VOCs. This project was completed in March 2017 and the full report is available at www.arb.ca.gov/research/apr/past/12-312.pdf.

- University of California - Riverside completed a study entitled "Air Quality Impacts of Low Vapor Pressure-Volatile Organic Compounds (LVP-VOCs)" in March 2017. This study utilized laboratory and environmental chamber experiments to evaluate the evaporation flux, and therefore atmospheric availability, of specific LVP-VOCs both as pure compounds and in consumer products sold in California, and investigate the ozone and secondary particle formation of these compounds once they enter the atmosphere. More information regarding this project can be found at www.arb.ca.gov/research/single-project.php?row_id=65165.

- University of California - Irvine completed a contract with CARB to collect whole air samples at Mount Wilson Observatory in Los Angeles, California to determine the chemical profiles of 56 VOC species that are being emitted into the atmosphere from the urban lowlands. The contract was initiated in June 2014 and completed in May 2017. The primary objective of this contract was to allow CARB to conduct source apportionment of greenhouse gases (such as methane and fluorinated gases) using VOC tracers that are associated to specific source sectors such as benzene and ethane. The report is available at www.arb.ca.gov/research/single-project.php?row_id=67112.

- CARB conducted the California Baseline Ozone Transport Study (CABOTS) field measurement campaign between May and August 2016 to better understand the spatial and temporal variations in baseline ozone entering California and its effect on surface air quality. The data will also help to refine our understanding of the contribution of global background ozone relative to California emissions on air quality in downwind states. Preliminary data from CABOTS is posted to the CARB website at: https://www.arb.ca.gov/research/cabots/cabots.htm.

These and other projects funded in fiscal year 2016-2017 provide CARB with the technical foundation to identify potential air pollutant health risks and develop and implement cost-effective strategies to meet State and federal ambient air quality standards.

Air Quality Monitoring

In fiscal year 2016-2017, CARB's air monitoring field operations and laboratory continued to play key roles in measuring progress towards attainment of criteria pollutant air quality standards and assessing and addressing potential community health risk. Field operations include real-time ambient air quality measurements of gaseous pollutants and particulate matter (PM). Analytical services provided by the laboratory support PM mass analysis, PM chemical speciation, toxic air contaminant and greenhouse gas analyses, community air protection monitoring, and the Study of Neighborhood Air near Petroleum Sources program, as well as special studies and air district requests.

California's Air Monitoring Network. Accurately measuring air quality is the foundation of California's efforts to reduce air pollution. For more than 50 years California has maintained one of the most extensive air monitoring networks in the world, collecting data on a wide range of pollutants. The information gathered from these networks makes it possible to track progress in cleaning the air and identify the most effective actions needed to meet health-based air quality standards. California's air monitoring program is a partnership between government agencies at the federal, state, and local level, along with universities and more recently with engaged community members and industry representatives. California's air monitoring networks are designed to meet a range of regulatory requirements, such as compliance with the federal Clean Air Act, as well as to help address research and public health priorities. The majority of California's air monitoring resources, reflected in the current statewide network of approximately 250 monitoring stations, have been dedicated to measuring ambient concentrations of criteria pollutants.

Twenty-four hour daily samples are collected throughout the State's air quality monitoring network. Most air quality data generated by field and laboratory operations are submitted to U.S. EPA's Air Quality System (AQS) database for public record. Combined, the field operation and laboratory annually generate over two million hourly measurements and over 300,000 daily sample results, respectively, from 265 air monitoring stations located throughout California and Northern Mexico. CARB staff also engaged with air district staff to develop 2016 Annual Monitoring Network plans which provide detailed information on California's regulatory monitoring network.

CARB's Aerometric Data Analysis and Management System (ADAM) and Air Quality and Meteorological Information System (AQMIS). ADAM and AQMIS provide official and preliminary air quality and meteorological data and statistics to the public via the Internet. The criteria pollutants and toxics data and statistics presented on the "iADAM website (at www.arb.ca.gov/adam) provide the public with air quality data

and trends for pollutants throughout the State, and are part of the foundation from which intelligent air quality strategies are developed.

AQMIS is a web-based source with automated quality assurance for real-time air quality and meteorological data. Official ADAM data replace preliminary AQMIS data on the AQMIS web site. AQMIS provides a hybrid of preliminary and official data which can be downloaded. AQMIS is also used for air pollution forecasting. In addition, near real-time monitoring data for ozone and particulate matter of 2.5 microns diameter or less (PM2.5) is publicly available on Breathewell, CARB's mobile web site. In addition, Aliso Canyon special purpose air monitoring data was made available to the public by AQMIS through June 2017 to aid the public in understanding their exposure to pollutants in this region. Finally, Today's Air Quality Index forecast monitors and provides public information regarding air quality conditions by ZIP code.

CARB's Office of Emergency Response (OER). CARB's data collection efforts also support air quality emergency response for events such as wildfires and industrial releases. The OER also provides a wide selection of specialized equipment for use in emergency events. This equipment includes PM monitors, as well as gas analyzers, meteorological sensors, and plume modeling software. These are all utilized to aid both first responders and the surrounding community in the event of an air emergency.

Emissions Inventories

CARB compiles, maintains, and improves detailed and comprehensive inventories of air pollution sources and their emissions. This includes collecting and assuring the quality of emissions information, training CARB and air district staff on accessing the inventory, processing inventory requests, and developing improved inventory systems. CARB staff addresses data gaps in understanding air pollution, collects information, develops emission estimation methodologies, conducts pollutant emissions studies, develops research concepts, and coordinates with stakeholders on emission inventory methods and estimates and supports community-level health assessments. CARB staff also investigates appropriate surrogates and growth factors to forecast future emissions and evaluates emission trends. These inventories of criteria pollutants and their precursors provide the technical foundation for air quality modeling of future year emissions needed to demonstrate attainment of health-based air quality standards, and form the basis for air quality planning and regulatory development processes. In fiscal year 2016-2017 CARB completed the emission inventory tasks identified below.

Annual Updates. CARB staff processes stationary source updates from air districts for approximately 20,000 individual facilities. This includes all criteria emissions data for the 2016 calendar year as well as any updates to stationary source data for previous years as requested by the air district. Staff load the data into the emission inventory system and perform quality assurance checks on the new data.

U.S. EPA National Emission Inventory (NEI) submittal. CARB staff submit criteria emissions to U.S. EPA annually. The NEI is on a three year cycle. Every three years staff must submit all stationary and area source criteria emission information to U.S. EPA. For the two years between these major submittals, CARB is required to submit such information only for major stationary sources. In fiscal year 2016-2017, staff submitted the 2016 major stationary source information for the NEI.

Forecasting. CARB staff, along with air districts and other stakeholders, refined the SIP base and future year emission estimates based upon the latest technical information. This included updating the air district rule-specific control profiles, evaluating and updating the growth factors to reflect the latest socioeconomic forecasts associated with specific source categories, and other emissions inventory improvements. In fiscal year 2016-2017, CARB staff developed emission inventory forecasts to support the Ozone and PM SIPs.

Identifying, Assessing, and Mitigating the Transport of Air Pollutants

Understanding the nature and impact of air pollution transported within California (typically from coastal to inland regions) informs a broad spectrum of CARB activities, including updates to air district attainment designations, and development of attainment plans, control strategies, and mitigation requirements. The ability to address transport impacts has improved significantly in the last few years due to the use of new highly sophisticated photochemical models, new data analysis techniques, and state of the art air quality studies conducted by the National Aeronautics and Space Administration and other researchers. CARB now uses these photochemical models combined with the latest air quality studies to develop comprehensive federal air quality plans, which consider the role of transport in determining necessary emission controls.

Comprehensive photochemical modeling work conducted in fiscal year 2016-2017 has further refined the understanding of transport, and underlies SIP attainment demonstrations for the federal ozone standard. A related CARB study helped to characterize the impacts of conditions aloft on surface air quality, further improving CARB's modeling of ozone concentrations in the San Joaquin Valley, and expanding the technical ability to identify regional and international transport impacts from aloft conditions. As a part of the comprehensive SIPs for the federal ozone standard, CARB staff conducted an in-depth evaluation of transport impacts for the East Kern, Coachella and Western Mojave and Antelope Valley regions of California. These transport relationships were reflected in the ozone attainment demonstrations for these areas.

CARB is responsible for assessing the relative transport contribution of ozone and ozone precursors between air districts and for establishing mitigation requirements. CARB first adopted transport mitigation requirements for air districts in 1990 based on an analysis of transport relationships between air districts. These relationships have subsequently been updated several times. CARB regulations identify transport couples consisting of an upwind area (source of transported emissions), the

corresponding downwind area (receptor of transported emissions), and the required mitigation requirements. Identified upwind air districts have been implementing mitigation requirements, identified in their State triennial ozone plan update submittals to CARB, for over two decades.

State Implementation Plans (SIPs)

8-hour Ozone SIPs. CARB staff developed and refined emission inventories that, along with air quality monitoring and air quality modeling, provided the technical foundation for the SIP attainment demonstrations for the federal 8-hour ozone standard due to U.S. EPA. During fiscal year 2016-2017, staff worked with air districts and other stakeholders to develop ozone SIPs for Sacramento Metro, Western Nevada, Eastern Kern, and Imperial County, and complete ozone SIPs for South Coast, San Joaquin Valley, Western Mojave, Coachella Valley, Ventura County, and San Diego County.

PM2.5 and PM10 SIPs. CARB staff developed and refined emission inventories that, along with air quality monitoring and air quality modeling, provided the technical foundation for the SIP attainment demonstrations for the federal PM standards due to U.S. EPA. During fiscal year 2016-2017, staff completed PM2.5 SIPs for Portola, Butte County, Northern Sierra, and South Coast. Staff continues to work on PM2.5 and PM10 SIPs for San Joaquin Valley and Imperial County.

CARB staff also completed weight of evidence (WOE) assessments to corroborate air quality modeled responses to emission reductions in the SIP. WOE assessments, which are an integral part of State Implementation Plans, were prepared for South Coast, San Joaquin Valley, Western Mojave, Eastern Kern, Coachella, Sacramento and Ventura nonattainment areas. These WOEs also included the development of a conceptual model characterizing air quality challenges and progress.

In addition, the federal Clean Air Act includes "interstate transport" provisions, which require states to develop Infrastructure SIPs that assess and address impacts of pollution in downwind states that may originate in upwind states. In recent years, U.S. EPA has strengthened health-based air quality standards for PM2.5, sulfur dioxide, and ozone. The updates to these standards triggered a requirement that California assess its pollutant contributions to areas in other states with poor air quality.

Identifying Indicators to Assess Air Quality Progress

State law directs CARB to develop air quality indicators that can be used to measure progress towards the attainment of State ozone air quality standards (Health and Safety Code Section 39607). CARB develops indicators for assessing peak ozone concentration and exposure. These indicators are used for assessing progress in State triennial ozone plans proposed by air districts. Because 8-hour ozone concentrations drive the State attainment status, CARB developed a calculation procedure and is now

providing 8-hour population weighted and area weighted exposure indicators for State triennial ozone plan updates.

In fiscal year 2016-2017, CARB's Aerometric Data Analysis and Modeling System (ADAM) was reprogramed for enhanced usability and to access expanded indicators. This air quality data can be viewed at http://www.arb.ca.gov/adam/. A real-time air quality database is also available, which allows the public and air districts to continually track and measure progress. Real-time air quality data are available at: http://www.arb.ca.gov/aqmis2/aqmis2.php.

CARB staff has developed other indicators to illustrate and evaluate progress towards both State and federal standards. These include air quality contour maps, which have been used to evaluate how the spatial extent of elevated concentrations has been reduced over time. Advanced indicators and data included in weight of evidence assessments included remote sensing, trajectories, pollution roses and advanced visualization products.

Finally, in fiscal year 2016-2017, initial area designation recommendations for the federal 8-hour (0.070 part per million) ozone standard were prepared and sent to U.S. EPA. Staff prepared a report summarizing initial area designation recommendations, which was approved at a September 22, 2016 meeting of the California Air Resources Board and submitted to U.S. EPA. CARB staff worked closely with air district and U.S. EPA staff in developing these recommendations.

Enforcement

Nonvehicular Sources. CARB's stationary source enforcement team provides compliance training to regulated entities, assists local air districts with inspections of stationary sources, investigates complaints, issues notices of violations, evaluates air district variances for compliance with statutory requirements, obtains and analyzes evidence to determine the date of onset, cause, and extent of violation of air pollution regulations, and reviews air district rules for enforceability. In fiscal year 2016-2017, CARB stationary source enforcement personnel:

- provided enforcement assistance to local air districts and other local and regional environmental agencies;
- esponded to air pollution complaints at stationary facilities;
- conducted investigations, and referred them to other agencies when appropriate;
- reviewed all air district hearing board orders for compliance with Health and Safety Code requirements;
- gathered and analyzed data from emission monitoring devices required by air districts at stationary sources;
- reviewed air district rules for enforceability, compliance with State laws, clarity, and accuracy; and

- developed a variety of practical, rule-specific publications that describe source processes and emission control equipment, clarify rule requirements, identify compliance issues, and promote self-regulation.

Consumer Products. CARB consumer product program investigators purchase samples of regulated consumer products from outlets all over California. They inspect product containers for compliance with registration and dating requirements and send selected products to the laboratory for testing. CARB laboratory staff conducts laboratory analyses of products selected and submitted by CARB's enforcement team to determine compliance with the applicable VOC and aromatic compound limits, and chlorinated solvent prohibitions.

During fiscal year 2016-2017, CARB enforcement staff collected over 2,100 samples of household and institutional consumer products. Sample selections focused on automotive specialty products, hair styling products, lubricants, paint thinners, solvents, and imported products. CARB laboratory staff analyzed over 880 product samples collected by enforcement staff, requiring over 4,500 individual analysis. The laboratory results for over 400 samples indicated that the VOC content for the products may have exceeded limits outlined in the Consumer Product Regulations.

As a result of these investigations, CARB issued 54 notices of violation during the fiscal year. After conducting office conferences, CARB staff worked to resolve the enforcement cases through administrative or civil actions. During the fiscal year, staff settled 67 cases involving hair styling products, air fresheners, nail polish removers, and a general purpose degreasing products. Some significant cases involved substantial sales of noncompliant hair styling products, air fresheners, nail polish removers, and general purpose degreasing products. Enforcement Division staff worked alongside CARB attorneys to settle each case. The $2,075,150 in penalties collected helped to mitigate more than 153 tons of excess emissions resulting from these violations. The annual enforcement report can be found at: https://ww2.arb.ca.gov/resources/documents/enforcement-reports.

Finally, laboratory staff also conducted special studies involving:

- evaluation of solvents per the analysis of ketones in aerosol coatings;
- analysis of hydrocarbon/aromatic solvents;
- analysis of acetates in aerosol coatings;
- evaluation of test method applicability for analysis of several new and proposed categories of consumer products;
- revision of propellant analytical methods to include additional analyses; and
- development of analytical methods to support enforcement of lower VOC limits.

These and other ongoing studies help ensure the most up-to-date science and analytical processes are used to evaluate continuously evolving consumer product formulations and maximize consumer product regulatory compliance.

History of the Fee Program

As originally enacted in 1988, Health and Safety Code Section 39612 authorized CARB to assess fees on nonvehicular sources that were allowed by air district permits to emit 500 tons or more per year of any air pollutant that forms ozone or particulate matter.

In 1989, the Board approved the California Clean Air Act Nonvehicular Source Fee Regulation (California Code of Regulations, title 17, sec.90800 et seq.). The original regulation included the fee rate and amounts to be remitted to CARB by the air districts for the first year of the program, fiscal year 1989-1990. In subsequent years, the Board approved amendments to the Fee Regulation identifying the amount of fees to be collected by each air district for the following fiscal year. To streamline the process, in 1998 the Board approved amendments that established a process whereby CARB's Executive Officer assesses the fees administratively.

In 2003, the Legislature enacted AB 10X, which amended Health and Safety Code Section 39612 and added Health and Safety Code Section 39613. The changes to Health and Safety Code Section 39612, included: (1) increasing the cap on facilities fees from $3 million to $13 million, 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 air district permits to emit 250 tons (instead of the previous 500 tons) or more per year of any air pollutant that forms ozone or particulate matter; and (3) authorizing CARB to collect the fees directly from all sources subject to the fees. In addition, Health and Safety Code Section 39613 required CARB to assess fees on manufacturers of consumer products and architectural coatings sold in California. The fees are assessed on manufacturers whose total California sales of consumer products or architectural coatings result in VOC emissions of 250 tons or more per year. CARB must use the fees collected pursuant to Health and Safety Code Section 39613 solely to mitigate or reduce air pollution in the State created by consumer products and architectural coatings. In July 2003, the Board approved amendments to the Nonvehicular Source Fee Regulation to collect the fees authorized by AB 10X.

In 2004, the Legislature authorized CARB to assess an additional $2.6 million on facilities for a total of $20 million. In November 2004, the Board approved amendments to the Fee Regulation, renamed Nonvehicular Source, Consumer Products, and Architectural Coatings Fee Regulation, to establish a procedure to collect the additional $2.6 million for fiscal year 2004-2005 and onward from facilities. The amendments also provided for collection from facilities of any legislatively-approved fees in fiscal years beyond fiscal year 2004-2005 that are in excess of $17.4 million. The full text version of the Nonvehicular Source Fee Regulation can be found on CARB's website at: http://www.arb.ca.gov/ei/nscpac_fees/comprehensive_fee_reg.pdf.