

Chapter 7

Attainment Strategy

2015 Plan for the 1997 PM_{2.5} Standard
SJVUAPCD

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Chapter 7: Attainment Strategy

7.1 COMPREHENSIVE REGULATORY CONTROL STRATEGY

The San Joaquin Valley Air Pollution Control District (District) has implemented a comprehensive regulatory control strategy over the past couple of decades. Since 1992, the District has adopted over 600 rules and amendments to implement this aggressive control strategy. Many current rules are fourth or fifth generation, meaning that they have been revised and emission limits have been lowered, as new emission control technology has become available and cost-effective.

Air quality improvements in the San Joaquin Valley (Valley) document the success of the District's innovative and effective rules. The District's regulatory authority is limited to stationary sources and some area-wide sources, and the District's stringent and innovative rules on these sources, such as those for residential fireplaces, glass manufacturing, and agricultural burning, have set benchmarks for California and the nation. States and the federal government, unlike the District, have the authority to directly regulate tailpipe emissions from mobile sources. California Air Resources Board (ARB) has adopted tough regulations for heavy-duty trucks, off-road equipment, and other mobile sources. However, the District has also adopted innovative regulations such as the Indirect Source Review and Employer-based Trip Reduction rules to reduce emissions from mobile sources within the District's limited jurisdiction over these sources.

The District's and ARB's rules already guarantee that emissions will continue to be reduced over the coming years. New commitments identified in this plan combined with other control strategies discussed in Appendices C through E will provide necessary emissions reductions to complement those already being achieved and contribute to PM_{2.5} air quality improvements in the Valley.

7.1.1 District Regulations Contributing to Continued PM_{2.5} Improvement

The District's current rules and regulations reflect technologies and methods that are far beyond minimum required control levels. In December 2010, ARB determined that, based on the District's State Implementation Plans (SIP) and the evaluation of control feasibility in all rulemaking actions, the District has undertaken *all feasible measures* to reduce nonattainment air pollutants from sources within the District's jurisdiction and regulatory control.¹ This determination considered all air pollution controls and standards applicable to all source categories under the District's authority based on maximum reductions achievable as well as technological, social, environmental, energy and economic factors, including cost-effectiveness.²

The aggressive regulations already adopted under previous attainment plans also serve as control measures for this *2015 PM_{2.5} Plan*. These adopted regulations will

¹ ARB Executive Order G-10-126. (2010, December 10), required under California Health and Safety Code §40612.

² California Administrative Code, Title 17 §70600(a)(1). (2012)

dramatically reduce directly emitted PM_{2.5} and PM_{2.5} precursors (NO_x and SO_x) as they are fully implemented over the next few years, greatly contributing to the Valley's progress toward the 1997 PM_{2.5} standard. EPA prefers reliance on control measures that have already been adopted over ones that have yet to be approved. EPA has gone so far as to disapprove attainment plans that demonstrated an over-reliance on unapproved measures. As such, the recognition of recently adopted and implemented District and ARB control measures is an important component of this plan.

Table 7-1 and the discussion that follows summarizes adopted District rules achieving new emissions reductions after 2012, the base year for this plan. However, even pre-2012 emissions reductions, such as those achieved through the District's Conservation Management Practices (CMP) rule (Rule 4550) and Regulation VIII (Fugitive PM₁₀ Prohibitions) will continue to contribute to the Valley's progress toward attainment of the 1997 PM_{2.5} standard.

Table 7-1 District Regulations Contributing to Attainment of PM_{2.5} NAAQS

Rule #	Adopted District Rule	Last Adoption/ Amendment Date
4307	Boilers, Steam Generators, and Process Heaters—2.0 MMBtu/hr to 5.0 MMBtu/hr	5/19/11
4308	Boilers, Steam Generators, and Process Heaters—0.075 MMBtu/hr to less than 2.0 MMBtu/hr	11/14/13
4311	Flares	6/18/09
4320	Advanced Emission Reduction Options for Boilers, Steam Generators, and Process Heaters Greater than 5.0 MMBtu/hr	10/16/08
4354	Glass Melting Furnaces	5/19/11
4702	Internal Combustion Engines	8/18/11
4703	Stationary Gas Turbines	9/20/07
4901	Wood Burning Fireplaces and Wood Burning Heaters	9/18/14
4902	Residential Water Heaters	3/19/09
4905	Natural Gas-Fired, Fan-Type Central Furnaces	1/22/15
9310	School Bus Fleets	9/21/06
9410	Employer-based Trip Reduction	12/17/09

Rule 4307 Boilers, Steam Generators, and Process Heaters 2 to 5 MMBtu/hr

Rule 4307 is the most stringent rule in the country for controlling emissions from fuel combustion-producing heat and energy for manufacturing and processing purposes. Emissions from these units are generally controlled through either combustion modification or exhaust gas treatment. Recent amendments strengthened the rule by removing some exemptions, imposing NO_x limits of 9 or 12 ppmv for new and replacement units, and adding a menu approach for particulate matter control that includes SO_x controls. While offering affected businesses cost-effective compliance options, this rule will generate 3.36 tpd of NO_x reductions by the final compliance deadline in 2015.

Rule 4308 Boilers, Steam Generators, and Process Heaters 0.075 to < 2 MMBtu/hr

Adopted in 2005 and amended in 2009 and 2013 to include more stringent NOx limits, Rule 4308 controls emissions from boilers, steam generators, and process heaters in the size range of 0.075 to less than 2 MMBtu/hr. The District amended this rule through an extensive public process involving the public and other air districts to receive feedback on what emissions limits were feasible and would provide for the greatest emissions reductions. As a point-of-sale rule, emissions are reduced when consumers replace older units with new, low-NOx units as of the January 1, 2015, compliance date.

Rule 4311 Flares

Amended on June 18, 2009, Rule 4311 controls emissions from industrial flares used at oil and gas production facilities, sewage treatment plants, waste incineration and petroleum refining operations. The 2009 amendments require flare operators to submit flare minimization plans, perform additional monitoring and record keeping, submit reports of planned and unplanned flaring activities to the District, and meet petroleum refinery SO₂ performance targets. When fully implemented in 2017, this rule is expected to reduce SOx emissions by 0.06 tpd. The District completed a further study that analyzed data from FMPs, annual monitoring reports, reportable flaring events reports, and made that study available on the District web page. The District continues to review research literature, federal regulations and guidance information, flare minimization plans, and emissions data to continue to search for potential opportunities to reduce emissions from these control and safety devices.

Rule 4320 Boilers, Steam Generators, and Process Heaters > 5 MMBtu/hr

The District adopted Rule 4320 in 2008, with multiple generations of Rules 4305 and 4306 preceding this rule to regulate this source category. This rule is the most stringent rule in the nation for controlling emissions from fuel combustion-producing heat and energy for manufacturing and processing purposes, and it is equivalent to BACT standards for this source category. Facilities generally control emissions from these sources through combustion modification or exhaust gas treatment. This rule and the 2005 amendment of Rule 4306 will reduce 3.5 tpd of NOx and 3.6 tpd of SOx as of the final implementation date in 2014. Rule 4306 generated 0.2 tpd of NOx reductions with the 2005 rule amendment, assuming 25% of the food industry took advantage of the enhanced NOx limits option put into the rule. The remaining 3.3 tpd of NOx reductions and 3.6 tpd of SOx reductions are achieved from the 2008 adoption of Rule 4320.

Rule 4354 Glass Melting Furnaces

District Rule 4354, adopted in 1994 and subsequently amended six times, is one of the most stringent rules in the nation for controlling NOx, SOx, and PM emissions from industrial glass manufacturing plants that make flat glass (window and automotive windshields), container glass (bottles and jars), and fiberglass (insulation). Recent amendments include more stringent NOx emission limits based on BACT level controls for container glass, fiberglass, and flat glass. The rule gives special consideration to container glass and fiberglass manufacturers who use 30% post-consumer materials under the state glass recycling regulations. The rule also includes a technology forcing

limit for flat glass furnaces. As a result of this stringent prohibitory rule and continuing efforts on behalf of this industry to reduce emissions, the Valley's glass melting furnaces use low-NOx firing technology. With compliance deadlines through January 1, 2014, this rule reduced an additional 3.28 tpd of NOx emissions, 1.12 tpd of SOx emissions, and 0.11 tpd of PM2.5 emissions.

Rule 4702 Internal Combustion Engines

The District has amended Rule 4702 four times since 2005 to implement stringent NOx limits for agricultural operations engines, implement more stringent NOx limit for non-agricultural operations engines, and to extend rule applicability to units with 25–50 brake horsepower (bhp). With multiple generations of rule amendments, Rule 4702 is the most stringent rule in the nation for this source category. Facilities generally control NOx emissions that result from the fuel combustion of internal combustion engines with advanced technologies, such as selective non-catalytic reduction and selective catalytic reduction.

Rule 4703 Stationary Gas Turbines

The District last amended Rule 4703 in September 2007 to reduce the NOx limits for existing stationary gas turbines that are 10 megawatts (MW) or less. This amendment achieved additional NOx emissions reductions from turbines used for cogeneration of electrical energy and steam for thermally enhanced oil recovery operations in the Valley. This rule equals or exceeds the most stringent source control of any air district in California by requiring BACT at these facilities. The District designed compliance schedules to allow reasonable time for completing modification and retrofit actions during scheduled overhauls of the gas turbines. The latest rule amendment achieves an additional 2.2 tpd of NOx reductions as of January 2012, the full implementation and compliance deadline.

Rule 4901 Wood-Burning Fireplaces and Wood-Burning Heaters

The District amended Rule 4901 in September 2014, two years ahead of the deadline in the *2012 PM2.5 Plan* commitment to reduce the wood-burning curtailment threshold, and provide public health benefits where they are needed most, in neighborhoods. Through this rule and the District's corresponding Check-Before-You-Burn program, the District prohibits use of wood-burning fireplaces and wood-burning heaters in areas with natural gas service when air quality is forecast to be above 20 µg/m³ of PM2.5. The District's Burn Cleaner incentive program combined with the tiered compliance thresholds in Rule 4901 allowing additional burn days for homes with District registered EPA-certified devices encourage the transition from high-polluting devices and open hearth fireplaces to cleaner alternatives. Rule amendments will reduce PM2.5 emissions by an average 5.1 tpd, as averaged over the months of November through February.

Rule 4902 Residential Water Heaters

The District adopted Rule 4902 on July 17, 1993 to control NOx emissions from natural gas-fired residential water heaters with heat input rates less than or equal to 75,000 Btu/hr by enforcing NOx emissions limit of 40 nanograms of NOx per Joule of heat

output (ng/J). The District amended Rule 4902 in 2009 to strengthen the rule by lowering the limit to 10 ng/J for new or replacement water heaters and to a limit of 14 ng/J for instantaneous water heaters. Retailer compliance dates ranged from 2010 to 2012, depending on the unit type. On and after the applicable compliance date, retailers have been required to sell only units complying with the new limits. As a point-of-sale rule, compliant units will be installed as the older units are replaced through attrition. The rule has controlled NOx emissions by approximately 88% for this source category. The 2009 amendments reduced an additional 0.5 tpd of NOx.

Rule 4905 Natural Gas-Fired, Fan-Type Residential Central Furnaces

Rule 4905 was adopted in 2005 to establish NOx limits for residential central furnaces supplied, sold, or installed in the Valley with a rated heat input capacity of less than 175,000 Btu/hour. The rule was most recently amended on January 22, 2015 to lower the NOx emission limit for residential units from 40 ng/J to 14 ng/J and to expand the applicability to include NOx emission limits of 14 ng/J for non-residential units and 40 ng/J for units installed in manufactured homes. The NOx emission limit for units installed in manufactured homes will be lowered to 14 ng/J in 2018. As a point-of-sale rule, emissions are reduced when consumers replace older units with newer, low-NOx units as of the compliance dates corresponding to each unit type: February 1, 2015 for units installed in manufactured homes; April 1, 2015 for all other condensing units; October 1, 2015 for non-condensing units; October 1, 2016 for weatherized units; and October 1, 2018 for the 14 ng/J limit for units installed in manufactured homes. Rule 4905 will achieve 1.87 tpd of NOx reductions by 2020 and 3.65 tpd of NOx reductions by full implementation in 2036, based on an average equipment life of 20 years.

Rule 9310 School Bus Fleets

The District adopted Rule 9310 in September 2006 to limit NOx, PM, and diesel toxic air contaminants from school bus fleets. Diesel-fueled school bus fleet operators must replace or retrofit all of their school buses to meet the applicable ARB and EPA emission standards for engines by 2016. The rule also requires all existing gasoline or alternative-fueled school buses and any diesel school buses manufactured after October 1, 2002 to be operated according to manufacturer specifications and, if replaced, shall meet all applicable ARB and EPA current-year emissions standards for the year of delivery of that school bus engine and fuel type.

Rule 9410 Employer-Based Trip Reduction (eTRIP Rule)

The goal of the eTRIP Rule is to reduce single-occupancy-vehicle work commutes. The eTRIP Rule requires the Valley's larger employers, representing a wide range of locales and sectors, to select and implement workplace measures that make it easier for their employees to choose ridesharing and alternative transportation. Because of the diversity of employers covered by the eTRIP Rule, the rule was built with a flexible, menu-based approach. Using the Employer Trip Reduction Implementation Plan (eTRIP), employers choose from a list of measures, each contributing to a workplace that encourages employees to reduce their dependence on single-occupancy vehicles. Each eTRIP measure has a point value, and employer eTRIPs must reach specified point targets for each strategy over a phased-in compliance schedule (2010 –

2015). The District has continually provided employer assistance through training, guidance materials, promotional information, and online reporting options. Upon full implementation, the eTRIP Rule will reduce NOx and VOC emissions from passenger vehicle commute trips by approximately 1.2 ton per day.

7.1.2 ARB Regulations Contributing to Attainment

Since 1989, ARB has adopted and amended a number of regulations aimed at reducing exposure to diesel PM and NOx from fuel sources, freight transport sources like heavy-duty diesel trucks, transportation sources like passenger cars and buses, and off-road sources like large construction equipment. These regulations have significantly reduced PM2.5 precursors and direct PM2.5 emissions throughout the Valley.

Table 7-2 below includes a list of all the regulations adopted or amended by ARB from 2000 to 2013. Phased implementation of these regulations are producing increasing emission reduction benefits until 2020 and beyond as the regulated fleets are retrofitted, and as older and dirtier fleet units are replaced with newer and cleaner models at an accelerated pace. Several rules in particular; including Cleaner In-Use Heavy Duty Trucks, Cleaner In-Use Off-Road Equipment, Advanced Clean Car Program, Enhanced Fleet Modernization Program, and the Enhanced Smog Check Program, will be achieving significant emissions reductions critically needed to attain the standard under this plan.

In addition, ARB and the District are working closely to identify and distribute incentive funds to accelerate dirty engine replacement. Key programs include the Carl Moyer Program, the Goods Movement Program, the Lower-Emission School Bus Program, and the Air Quality Improvement Program (AQIP). These incentive-based programs work in tandem with regulations to accelerate deployment of cleaner technology.

Table 7-2 Adopted ARB Regulations

ARB Regulation	Adoption Date	Category
Advanced Clean Car Program	1/27/2012	On-road
Expanded Off-Road Recreational Vehicle Emission Standards	12/16/2011	Off-road
Cleaner In-Use Off-Road Equipment	12/17/2010	Off-road
Port Truck Modernization	12/17/2010	Off-road
Cleaner In-Use Heavy-Duty Trucks	12/16/2010	On-road
Accelerated Introduction of Cleaner Line-Haul Locomotives	06/24/2010	Other
Enhanced Fleet Modernization Program (formerly called the Expanded Vehicle Retirement Program)	06/24/2010	On-road
Smog Check Improvements	08/31/2009	On-road
Portable Outboard Marine Tanks	09/25/2008	Off-road
In-Use Heavy-Duty Trucks Regulation	12/11/2008	On-road
On-Road Diesel-Fueled Heavy-Duty Drayage Trucks at Ports and Rail Yard Facilities	12/6/2007	On-road
In-Use Off-Road diesel Equipment Regulation	07/26/2007	Off-road
Clean Up Existing Harbor Craft	11/15/2007	Other
Voluntary Accelerated Retirement Regulation	12/07/2006	On-road

ARB Regulation	Adoption Date	Category
Emergency Regulation for Portable Equipment Registration Program, Airborne Toxic Control Measures and Portable and Stationary diesel-Fueled Engines	12/06/2006	Off-road
Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Agricultural Eng. Exemption removal)	11/16/2006	Other
Distributed Generation Guidelines and Regulations	10/19/2006	Other
Zero Emission Bus Regulation	10/19/2006	On-road
Heavy-Duty In-Use Compliance Regulation	09/28/2006	On-road
On-Board Diagnostic II	09/28/2006	On-road
Off-Highway Recreational Vehicles and Engines	07/20/2006	Off-road
California Motor Vehicle Service Information Rule	06/22/2006	On-road
Portable Equipment Registration Program	06/22/2006	Off-road
Fork Lifts and Other Industrial Equipment (Large Off-Road Spark Ignition Engines > 1 liter)	05/26/2006	Off-road
Technical Amendments to Evaporative Exhaust and Evaporative Emissions Test Procedures	05/25/2006	On-road
Diesel Verification Procedure, Warranty & In-Use	03/23/2006	On-road
AB1009 Heavy-Duty Vehicle Smoke Inspection Program	01/26/2006	On-road
Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel-Fueled Vehicles Owned or Operated by Public Agencies and Utilities	12/08/2005	On-road
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards	12/08/2005	Off-road
Marine Inboard Sterndrive Engines	11/17/2005	Off-road
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008	10/20/2005	On-road
2007-2009 Model-Year Heavy Duty Urban Bus Engines and the Fleet Rule for Transit Agencies	09/15/2005	On-road
Portable Fuel Containers (PFC) [Part 1 of 2]	09/15/2005	Off road
Portable Fuel Containers (PFC) [Part 2 of 2]	09/15/2005	Off road
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD)	07/21/2005	On-road
Airborne Toxic Control Measure for Stationary Compression Ignition Engines amendments	05/26/2005	Other
Transit Fleet Rule	02/24/2005	On-road
Off-Road Compression Ignition Engines	12/09/2004	Off-road
Emergency Regulation for Temporary Delay of Diesel Fuel Lubricity Standard	11/24/2004	Fuels
Diesel Fuel Standards for Harbor Craft & Locomotives	11/18/2004	Fuels
Greenhouse Gas	09/23/2004	On-road
Airborne Toxic Control Measure for Diesel Particulate from Diesel Fueled Commercial Vehicle Idling	07/22/2004	On-road
Urban Bus Engines/Fleet Rule for Transit Agencies	06/24/2004	On-road
Engine Manufacturer Diagnostic System Requirements for 2007 and Subsequent Model Heavy Duty Engines	05/20/2004	On-road
Heavy Duty Diesel Engine-Chip Reflash	03/27/2004	On-road
Airborne Toxic Control Measure for Diesel-Fueled Portable Engines	02/26/2004	Off-road
Modifications to the Statewide Portable Equipment Registration Program (PERP) Regulations	02/26/2004	Off-road
CA Motor Vehicle Service Information Rule	01/22/2004	On-road
Airborne Toxic Control Measure for Diesel Particulate for Transport Refrigeration Units	12/11/2003	On-road

ARB Regulation	Adoption Date	Category
Airborne Toxic Control Measure for Stationary Compression Ignition Engines	12/11/2003	Other
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements Amendments	12/11/2003	On-road
Small Off-Road Engines (SORE)	09/25/2003	Off-road
Solid Waste Collection Vehicles	09/24/2003	On-road
Off-Highway Recreation Vehicles	07/24/2003	Off-road
Specifications for Motor Vehicle Diesel Fuel	07/24/2003	Fuels
Zero Emission Vehicle Amendments for 2003	03/25/2003	On-road
Airborne Toxic Control Measure for Diesel Particulate from School Bus Idling	12/12/2002	On-road
Low Emission Vehicles II. Align Heavy Duty Gas Engine Standards with Federal Standards; minor administrative changes	12/12/2002	On-road
Revision to Transit Bus Regulations Amendments	10/24/2002	On-road
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements	05/16/2002	On-road
On-Board Diagnostic II Review Amendments	04/25/2002	On-road
Airborne Toxic Control Measure for Outdoor Residential Waste Burning	02/21/2002	Other
Voluntary Accelerated Light Duty Vehicle Retirement Regulations	02/21/2002	On-road
California Motor Vehicle Service Information Rule	12/13/2001	On-road
Distributed Generation Guidelines and Regulations	11/15/2001	Other
Low Emission Vehicle Regulations	11/15/2001	On-road
Heavy Duty Diesel Engine Standards for 2007 and Later	10/25/2001	On-road
Marine Inboard Engines	07/26/2001	Off-road
Zero Emission Vehicle Infrastructure and Standardization of Electric Vehicle Charging Equipment	06/28/2001	On-road
Zero Emission Vehicle Regulation Update	01/25/2001	On-road
Heavy Duty Diesel Engines "Not-to-Exceed (NTE)" Test Procedures	12/07/2000	On-road
Light-and Medium Duty Low Emission Vehicle Alignment with Federal Standards. Exhaust Emission Standards for Heavy Duty Gas Engines	12/07/2000	On-road
Air Toxic Control Measure for Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Facilities	04/27/2000	Other
Transit Bus Standards	02/24/2000	On-road
Off-Road Compression Ignition Engines	01/27/2000	Off-road

Some of the most significant regulations adopted by ARB in recent years, such as the Truck and Bus Regulation and the Off-Road Regulation, depend on truck and equipment owners playing a key role in implementation. Accordingly, ARB's approach to ensuring compliance is based on a comprehensive outreach and education effort. ARB staff develops regulatory assistance tools, conducts and coordinates compliance assistance and outreach activities, administers incentive programs, and actively enforces the entire suite of diesel regulations. ARB's goal is to provide readily accessible and clear information for all diesel rules and incentive programs.

ARB compliance assistance and outreach activities also include the following:

- Training and implementation classes conducted by ARB staff in classroom settings throughout the State, including at community colleges
- Participation at business events throughout California, giving presentations, displaying materials, providing handouts, and responding to questions
- Marketing efforts such as advertisements, press releases, a television presence, and radio spots, including public service announcements statewide
- Websites for ARB's multiple programs

Complementing these efforts, ARB and District enforcement actively provide a level playing field for the regulated entities and ensure the emission reduction benefits are achieved.

The following summaries highlight ARB's most recent key regulations, the roll out of their phased implementation deadlines and corresponding emission reduction schedule, and supporting outreach and enforcement efforts.

7.1.3 Cleaner In-Use Heavy-Duty Trucks (Truck and Bus Regulation)

One of the most significant rules adopted by ARB within the past five years is the Truck and Bus Regulation, adopted in December 2008. In December 2010, ARB revised specific provisions of the in-use heavy-duty truck rule, in recognition of the deep economic effects of the recession on these businesses and the corresponding decline in their emissions. This rule represents a multi-year effort to turn over the legacy fleet of engines and replace them with the cleanest technology available.

Starting in 2012, the Truck and Bus Regulation phases in requirements applicable to an increasingly larger percentage of the truck and bus fleet over time, so that by 2023, nearly all older vehicles will need to be upgraded to have exhaust emissions meeting 2010 model year engine emissions levels. Replacing older, high polluting trucks sooner than they otherwise would have been retired results in lower NOx and PM2.5 emissions.

The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds, including on-road and off-road agricultural yard goats, and privately and publicly owned school buses. Moreover, the regulation applies to any person, business, school district, or federal government agency that owns, operates, leases, or rents affected vehicles. The regulation also establishes requirements for any in-state or out-of-state motor carrier, California-based broker, or any California resident who directs or dispatches vehicles subject to the regulation. Finally, California sellers of a vehicle subject to the regulation would have to disclose the regulation's potential applicability to buyers of the vehicles. Approximately 170,000 businesses in nearly all industry sectors in California, and almost a million vehicles that operate on California roads each year, are affected. Some common industry sectors that operate vehicles subject to the regulation include for-hire transportation, construction, manufacturing, retail and wholesale trade, vehicle leasing and rental, bus lines, and agriculture.

In addition to the Truck and Bus Regulation, separate regulations reduce emissions from other public fleets, solid waste collection trucks, and transit buses. Trucks that transport marine containers must comply with the drayage truck regulation.

ARB compliance assistance and outreach activities in support of the Truck and Bus Regulation include the following:

- The Truck Regulations Upload and Compliance Reporting System, an online reporting tool developed and maintained by ARB staff
- The Truck and Bus regulation's fleet calculator, a tool designed to assist fleet owners in evaluating various compliance strategies
- Targeted training sessions all over the State
- Out-of-state training sessions conducted by a contractor

ARB and District enforcement provides a level playing field for the regulated entities and ensures the emission reduction benefits are achieved. ARB staff enforce diesel regulations addressing idling, transport refrigeration units (TRU) and drayage trucks, and recently began enforcing the Truck and Bus regulation as it came up to its first compliance deadline in 2012.

In general, enforcement is conducted by doing unscheduled roadside inspections. An inspection team may typically focus on truck stops, rest stops, industrial areas, ports, environmental justice areas, and cold storage facilities. Vehicles are audited for all applicable requirements, including smoke, emission control labels, and diesel particulate filters. To expand enforcement capabilities, ARB contracts with the District and the Bay Area Air Quality Management District to conduct inspections in their respective jurisdictions.

7.1.4 Cleaner In-Use Off-Road Equipment (Off-Road Regulation)

Another significant rule adopted by ARB within the past five years is the Off-Road Regulation, which was first approved in 2007 and amended in 2010 in response to the economic recession. These off-road vehicles are used in construction, manufacturing, the rental industry, road maintenance, airport ground support, and landscaping. In December 2011, the Off-Road Regulation was modified to include on-road trucks with two diesel engines.

The Off-Road Regulation will significantly reduce emissions of diesel PM and NO_x from the over 150,000 in-use off-road diesel vehicles that operate in California by requiring their owners to modernize their fleets and install exhaust retrofits. The regulation affects dozens of vehicle types used in thousands of fleets by requiring owners to modernize their fleets by replacing older engines or vehicles with newer, cleaner models; retiring older vehicles or using them less often; or by applying retrofit exhaust controls.

The Off-Road Regulation imposes idling limits on off-road diesel vehicles, requires a written idling policy, and requires a disclosure when selling vehicles. The regulation also requires that all vehicles be reported to ARB and labeled; restricts the addition of older vehicles into fleets; and requires fleets to reduce their emissions by retiring, replacing, or repowering older engines, or installing verified exhaust retrofits. The requirements and compliance dates of the Off-Road Regulation vary by fleet size.

The regulation also sets performance requirements. While the regulation has many specific provisions, in general, by each compliance deadline, a fleet must demonstrate that it has either met the fleet average target for that year, or has completed BACT requirements. The performance requirements of the Off-Road Regulation will be phased in from January 1, 2014, through January 1, 2019. The combined impact of the performance requirements results in steady declines in NOx and PM2.5 emissions from 2014 to 2019 and beyond.

Compliance assistance and outreach activities in support of the Off-Road Regulation include the following:

- The Diesel Off-Road On-Line Reporting System, an online reporting tool developed and maintained by ARB staff
- The Diesel Hotline (866-6DIESEL), which provides regulated operators with answers (in English, Spanish, and Punjabi) about the regulations and access to ARB staff
- The Off-road Listserv, providing equipment owners and dealerships with timely announcement of regulatory changes, regulatory assistance documents, and reminders for deadlines

7.1.5 Advanced Clean Cars (ACC)

Many gasoline engines now emit at near-zero emission levels of smog-forming emissions. Conventional hybrid electric vehicles have been commercialized, and the number of models offered for sale is quickly expanding. Recently, battery-electric vehicles and plug-in hybrid-electric vehicles have been introduced for sale, and fuel cell electric vehicles are expected to be sold beginning in 2015. This movement towards commercialization of advanced clean cars has occurred because of ARB's Zero Emission Vehicle (ZEV) regulation, which affects passenger cars and light-duty trucks. Continuing its leadership role in developing innovative and ground-breaking emission control programs, ARB's ACC Program, approved in January 2012, is a pioneering *package* of regulations, that although separate in construction, each regulation is related in terms of the synergy developed to address both ambient air quality needs and climate change. The ACC program combines the control of smog, soot-causing pollutants, and greenhouse gas emissions into a single, coordinated package of requirements for model years 2015 through 2025. The program assures the development of environmentally superior cars that will continue to deliver the performance, utility, and safety vehicle owners have come to expect.

The ACC program approved by ARB in January 2012 included amendments affecting the current ZEV regulation through the 2017 model year in order to enable manufacturers to successfully meet 2018 and subsequent model-year requirements. The ZEV amendments for 2018 and subsequent model years in the ACC program approved by ARB in January 2012 are intended to achieve commercialization through simplifying the regulation and pushing technology to higher volume production in order to achieve cost reductions.

The ACC Program will produce increasing benefits over time as new cleaner cars enter the fleet, displacing older and dirtier vehicles. In this manner, the benefits will be realized through the cumulative reduction in emissions achieved by new cars entering the fleet in 2017 through 2019. This program will continue to provide benefits well after 2025 as vehicles meeting the new standards replace older, higher-emitting vehicles.

7.1.6 Expanded Passenger Vehicle Retirement

Voluntary accelerated vehicle retirement or car scrap programs provide monetary incentives to vehicle owners to retire older, more polluting vehicles. The purpose of these programs is to reduce fleet emissions by accelerating the turnover of the existing fleet and subsequent replacement with newer, cleaner vehicles. Reducing emissions from the existing fleet is a component of California's SIP, which outlines the State's strategy for meeting health-based ambient air quality standards. Both State and local vehicle retirement programs are available.

California's updated voluntary vehicle retirement program is administered by the Bureau of Automotive Repair (BAR) and provides \$1,000 per vehicle, and \$1,500 for low-income consumers, for unwanted vehicles that have either failed or passed their last Smog Check Test and that meet certain eligibility guidelines. This program is referred to as the Consumer Assistance Program.

The Enhanced Fleet Modernization Program (EFMP) was approved by the AB 118 legislation to augment the State's existing vehicle retirement program. Approximately \$30 million is available annually through 2015 to fund the EFMP via a \$1 increase in vehicle registration fees. ARB developed the program in consultation with BAR, and based on the District's experience in running vehicle retirement programs. The program is jointly administered by both BAR (for vehicle retirement) and local air districts (for vehicle replacement).

Other programs, in addition to vehicle retirement programs, help to clean up the light-duty fleet. The AQIP, established by AB 118, is an ARB voluntary incentive program to fund clean vehicle and equipment projects. The Clean Vehicle Rebate Project (CVRP) is one of the current projects under AQIP. CVRP, started in 2009, is designed to accelerate widespread commercialization of zero-emission vehicles and plug-in hybrid electric vehicles by providing consumer rebates up to \$2,500 to partially offset the higher cost of these advanced technologies. These vehicles are a key

element of California's strategy for meeting health based air quality standards and climate change goals.

7.1.7 Improvements and Enhancements to California's Smog Check Program

The following requirements were added to improve and enhance the Smog Check Program, making it more inclusive of motor vehicles and effective on smog reductions:

- Low pressure evaporative test;
- More stringent pass/fail cutpoints;
- Visible smoke test; and
- Inspection of light- and medium-duty diesel vehicles.

AB 2289, adopted in October 2010, is a new law restructuring California's Smog Check Program, streamlining and strengthening inspections, increasing penalties for misconduct, and reducing costs to motorists. This new law, sponsored by ARB and BAR, promises faster and less expensive Smog Checks by taking advantage of diagnostic software installed on all vehicles since 2000. The new law also directs vehicles without this equipment to high-performing stations, helping to ensure that these cars comply with current emission standards.

This program will reduce consumer costs by having stations take advantage of diagnostic software that monitors pollution-reduction components and tailpipe emissions. This technology, known as On-Board Diagnostics (OBD), has been required on all new vehicles since 1996. Under the new law, testing of passenger vehicles using OBD began in 2013 on all vehicles model years 2000 or newer. This technology results in reduced consumer costs by up to \$180 million annually.

7.2 INCENTIVES

Incentive programs are an integral part of the efforts to reduce emissions; these programs provide an effective way to accelerate emissions reductions and encourage technology advancements, particularly in the mobile source sector, a sector not directly under the District's regulatory jurisdiction. The District operates one of the largest and most well-respected voluntary incentive programs in the state. Since the District's inception in 1992, considerable funding has been expended in support of clean-air projects in the Valley. These projects have achieved significant emissions reductions with corresponding air quality and health benefits. The District typically requires match funding of 30% to 70% from grant recipients. To date, grant recipients have provided \$526,600,794 in matching funds, with a combined District and grant recipient funding investment of \$1.2 Billion.

7.2.1 Funding Sources

The District is engaged at every level of state and federal government to craft policy and funding targets that account for the Valley's unique challenges and need to accelerate emissions reductions, particularly from sources not under the District's regulatory authority. Toward that end, the District is working closely with the Valley's legislative delegation to ensure that the Valley's needs are well represented in discussions of where to focus funding throughout the state and the region as a whole. In addition, the District is focused on how to effectively allocate the limited funding received for its incentive programs.

The District continues to dedicate significant effort to ensure that the Valley receives its share of state and federal incentive funds through a variety of sources. In addition to aggressively pursuing funding from state funding sources such as the Carl Moyer Program and Lower-Emission School Bus Program, the District has been very successful in securing grants from the highly-competitive federal Diesel Emissions reductions Act (DERA) and the state Assembly Bill (AB) 118 Air Quality Improvement Program (AQIP). Currently, the District is actively engaged with ARB and the California Energy Commission (CEC) to ensure that the Valley is well represented in projects selections from the Greenhouse Gas Reduction Fund totaling over \$1 billion per year.

The District derives its current incentive funding from a range of local, state and federal funding sources. These funding sources contain restrictions on the types of projects that may be funded, funding limitations, expenditure deadlines, and administrative approach for distribution. These requirements vary significantly from one funding source to another, resulting in a complex matrix of funding categories and program requirements. Some of the key funding sources currently available to the District include:

Carl Moyer Funding - The Carl Moyer program has been an on-going and reliable source of funding since 1998. The Carl Moyer program was established in 2004 with the adoption of AB 923 and Senate Bill (SB) 1107; the latter provided increased and continued funding through 2014 and expanded the program to include light-duty vehicle projects and agricultural sources of air pollution. In total, the District receives approximately \$9 million per year in Carl Moyer funding. Recent legislation extended Carl Moyer funding until 2024.

State AB 118 Funding - In 2007, the California legislature approved AB 118: the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007. AB 118 provides approximately \$200 million annually through 2015 for three new programs to fund air quality improvement projects and develop and deploy technology and alternative and renewable fuels. The bill creates a dedicated revenue stream for the programs through increases to the smog abatement, vehicle registration, and vessel registration fees. AB 118 is designed to reduce emissions of criteria pollutants and greenhouse gas emissions and to deploy advanced technology. Most AB 118 programs are administered on a statewide basis. While the District has administered some of the AB 118 programs for the state, these programs have not been

a significant portion of the District's incentive program revenue. However, in the future, these funds may be more important, particularly as the District becomes more involved in technology advancement projects. Recent legislation extended AB 118 funding until 2024.

Proposition 1B Goods Movement Emission Reduction Program - The single largest source of funding for the District's incentive programs is the Proposition 1B program, which uses bond funds for a variety of state transportation priorities. The District aggressively pursued its share of Proposition 1B funding, and the Valley will receive approximately \$250 million over the life of the program. The District will receive its last allocation of Proposition 1B funding in fiscal year 2015-2016.

Local Motor Vehicle Surcharge Fees – Through the passage of Assembly Bill 2522 in 2008 and in recognition of the need for additional funding to assist the Valley attain federal ambient air quality standards, the District was provided with the authority to generate grant revenues through the adoption of motor vehicle surcharges for the purpose of funding emission reduction projects. In October 2010, the District acted on this authority and adopted a \$12 per motor vehicle surcharge. This revenue source was then targeted to address the Valley's unmatched challenges in meeting ever-tightening federal standards as well as providing a more equitable manner to satisfy the federal mandates for ozone nonattainment penalties under section 185. These revenues have been reinvested in the Valley to reduce emissions through a variety of incentive grant programs that have replaced or retrofitted trucks, passenger vehicles, school buses, transit buses, and other mobile sources of emissions.

The District has now had two consecutive years of no violations of the 1-hour ozone standard, and has requested that EPA find the Valley in attainment and lift the section 185 penalties. If successful, this would return local control over the decision relating to the need and quantity of motor vehicle surcharges under AB 2522. Given the identified need for continued incentive funding as a means for expediting attainment of the 1997 federal PM_{2.5} standard and garnering the needed attainment extension, the District is proposing to use a portion of these motor vehicle surcharge revenues to fund an emission reduction commitment in the proposed plan. Therefore, it is recommended that the AB 2522 motor vehicle surcharge be discontinued if and when the Governing Board makes a decision that such revenues are no longer necessary to meet the federal mandates for attaining the national ambient air quality standards.

7.2.2 Incentive Strategy

Each of the funding sources administered by the District includes different guidelines and statutory requirements for using the funds. Beyond the specific guidelines of each funding source, the District considers the following common factors when deciding how and where to spend incentive funds (see Appendix E for the full description of the following):

- Cost-effectiveness

- Inventory of available projects
- Required expenditure timeframes
- Upcoming regulatory deadlines
- Health benefits
- Promoting technology advancement
- Environmental Justice
- Community involvement/benefits

7.2.3 SIP Creditability of Incentive Programs (Rule 9610)

Historically, states and local air agencies have not been able to obtain SIP credit for incentive-based emissions reductions. When given SIP credit, incentive-based emissions reductions can be used alongside regulatory-based emissions reductions to meet federal Clean Air Act (CAA) requirements, such as demonstrating attainment with federal air quality standards at a future date or demonstrating that emissions reductions meet federal SIP reasonable further progress requirements. Given the heavy investment from the public and private sectors in replacing equipment under these voluntary incentives, establishing a general framework to receive SIP credit for these emissions reductions was critical for ensuring the continued success of these programs. Working together with EPA, ARB, and the USDA-NRCS, the District adopted Rule 9610 (State Implementation Credit for Emission Reductions Generated Through Incentive Programs) on June 20, 2013. District Rule 9610 establishes the administrative mechanism through which the District and ARB take SIP credit for emissions reduced through incentives.

7.2.4 Commitments to Evaluate and Achieve Additional Emission Reductions

In developing the *2015 PM_{2.5} Plan*, the District left no stone unturned in evaluating all feasible regulatory and non-regulatory measures to reduce direct PM_{2.5} and precursor emissions. Based on this evaluation, this section includes a wide range of commitments to evaluate and achieve additional emissions reductions through a combination of regulatory and non-regulatory strategies.

7.2.4.1 **Commitment to Achieve Emissions Reductions Through Incentive Programs**

This extensive research and planning effort demonstrates that the District cannot attain the 1997 federal PM_{2.5} standard and other national ambient air quality standards with regulations alone and that additional emissions reductions from a well-funded incentive-based strategy are necessary to expedite attainment. Towards that end, the District commits to achieving surplus emissions reductions through the following grant funding allocations:

1. **Replace Heavy Duty Trucks** – Through the use of motor vehicle surcharge funds generated through the District's authority under AB 2522, the District commits to allocating \$10,000,000, for the period of 2016 through 2020, towards the replacement of heavy duty trucks in the San Joaquin Valley through the

District's Truck Voucher Incentive Program, achieving emissions reductions surplus to the State Truck and Bus Regulation

- a. **Amount of Funding:** \$10,000,000; for period of 2016 through 2020
 - b. **Number of Trucks Replaced:** 152 - 200
 - c. **Surplus Emissions Reductions Achieved:** 0.25 – 0.33 tons NOx/day
2. **[ARB COMMITMENT – Replace Heavy Duty Trucks Utilized in Agricultural Operations]** – ARB has committed to provide funding in this plan towards the replacement of heavy duty trucks employed in agricultural activities, achieving emissions reductions surplus to the State Truck and Bus Regulation.
3. **Replace Residential Woodburning Devices** – Through the use of locally-generated funding, the District commits to allocating \$7,500,000, for the period of 2016 through 2020, towards the replacement of old high polluting residential woodburning devices in the San Joaquin Valley through the District's Burn Cleaner Incentive Program, achieving emissions reductions surplus to District Rule 4901.
- a. **Amount of Funding:** \$7,500,000; for period of 2016 through 2020
 - b. **Number of Devices Replaced:** 4,000 – 7,500
 - c. **Surplus Emissions Reductions Achieved:** 0.1 – 0.4 tons of PM2.5 per day

7.2.4.2 Rule 4550 – Conservation Management Practices

Due to the impact of recent extreme drought conditions on the Valley's ability to attain federal PM2.5 standards and need to search for all available PM2.5 emissions reductions, the District commits to evaluating opportunities for further reducing PM2.5 emissions associated with on-field activities at agricultural operations. This multi-faceted evaluation will be conducted in 2015/16 in close coordination with stakeholders (agricultural industry representatives, ARB, EPA, NRCS, farm bureaus, and others) and will include the following elements:

1. While windblown dust episodes are infrequent and do not significantly contribute to elevated PM2.5 levels, the District commits to working with stakeholders to evaluate the impact of windblown fugitive emissions from agricultural operations on PM2.5 concentrations and the Valley's ability to attain federal PM2.5 standards. Additionally, the District will work with stakeholders to evaluate potential conservation management practices that may assist in reducing emissions and associated PM2.5 impacts from windblown fugitive emissions. For example, collaborative research projects involving multiple agencies and agricultural stakeholders, such as EPA's Regional Applied Research Effort (RARE), have proven useful in increasing the understanding of CMP effectiveness in reducing PM2.5 emissions. This evaluation will commence in the 3rd quarter of 2015, and will be concluded in time to assist in identifying

potential additional control measures for inclusion in the upcoming attainment plans to address the 2006 and 2012 federal PM_{2.5} standards, projected for adoption in late 2016/early 2017.

2. The District commits to continue working with stakeholders to identify new advanced technologies that reduce emissions associated with on-field agricultural activities through the District's Technology Advancement Program. This effort will involve close coordination with agricultural stakeholders and other agencies that also promote the advancement of such technologies, including the USDA-NRCS and CDFA. New technologies that are demonstrated through this effort as being technologically achievable and economically feasible will be considered for inclusion in the CMP program. Additionally, such new technologies could also be promoted through existing or new incentive programs.
3. The District commits to conducting additional outreach and education efforts to encourage agricultural operations to increase their adoption and implementation of conservation tillage practices as feasible. Additionally, the District commits to evaluating opportunities for increasing the incentive for agricultural operations that adopt conservation tillage practices by recognizing the greater relative emission reduction benefits associated with conservation tillage in the CMP Plan application and approval process. This evaluation will commence in the 3rd quarter of 2015, and will be concluded in time to assist in developing the upcoming attainment plans for the 2006 and 2012 federal PM_{2.5} standards, projected for adoption in late 2016/early 2017.

7.2.4.3 Rule 4311 - Flares

The District has not identified any additional feasible control practices for flares at this time. However, due to the need to demonstrate attainment for multiple federal ozone and PM_{2.5} standards in the coming years and need to search for all available emissions reductions, the District commits to undertaking a comprehensive review of FMPs submitted under Rule 4311. This review will be conducted in 2015/16 for the purpose of identifying opportunities for inclusion in upcoming attainment plans to address the 2006 and 2012 federal PM_{2.5} standards and 2008 federal ozone standard. This evaluation will include the following:

1. By the 1st quarter of 2016, review submitted FMPs to identify the most effective flare minimization practices utilized by operators to reduce flaring in various source categories and applications. Once identified, the District commits to working closely with affected operators to evaluate and implement, when feasible, the most effective flare minimization practices through the FMP submittal and approval process under Rule 4311.
2. The District commits to evaluating the technological achievability and economic feasibility of implementing new/additional minimization practices or technologies at affected facilities for potential inclusion as control measures by mid-2016, in

time to assist in identifying potential additional control measures for inclusion in upcoming attainment plans to address the 2006 and 2012 federal PM_{2.5} standards and 2008 federal ozone standard, projected for adoption in late 2016/early 2017.

7.2.4.4 Warm Mix Asphalt

Emissions from asphalt usage are extremely small and do not significantly contribute to elevated PM_{2.5} levels in the Valley. However, due to the need to demonstrate attainment for multiple federal ozone and PM_{2.5} standards in the coming years and need to search for all available emissions reductions, the District commits to a number of actions to evaluate and promote the use of WMA in the Valley. This review will be conducted in 2015/16 in close coordination with stakeholders (asphalt plant operators, Caltrans, city and county planning departments, ARB, EPA, and others) with the purpose of identifying opportunities for inclusion in upcoming attainment plans to address the 2006 federal PM_{2.5} standard, 2008 federal ozone standard, and 2012 federal PM_{2.5} standard. This evaluation will include the following:

1. The District commits to evaluating opportunities to further encourage transportation and county agencies to mandate the transition from HMA to WMA by mid-2016, in time to assist in identifying potential additional control measures for inclusion in upcoming attainment plans to address the 2006 and 2012 federal PM_{2.5} standards and 2008 federal ozone standard, projected for adoption in late 2016/early 2017. As part of this evaluation, the District will explore the potential of granting mitigation credits for WMA usage through the District's Indirect Source Review (ISR) program.
2. Commencing in the first quarter of 2016, the District commits to conducting additional outreach and education efforts to encourage project developers/construction managers to increase their adoption and implementation of warm mix asphalt applications.

7.2.4.5 Charbroiling

Existing Rule 4692 (Commercial Charbroiling) achieves significant emissions reductions from chain-driven charbroilers; however, the rule does not require emissions controls for under-fired charbroilers. Analyses indicate that extending the applicability of the rule to include under-fired units could further reduce PM_{2.5} emissions by as much as 20% (0.4 tpd PM_{2.5}) from the baseline inventory for under-fired charbroilers upon implementation in 2017 thus providing significant health benefits Valley-wide per the District's Health Risk Reduction Strategy. Research and demonstration projects are underway to evaluate emission control technologies for under-fired charbroilers in support of this measure. As similarly included in the *2012 PM_{2.5} Plan*, the District commits to amend Rule 4692 in 2016 to add requirements for under-fired charbroilers, with an anticipated compliance date of 2017. The District will also consider development of a new incentive program to assist in the deployment of new technologies upon their development and commercial availability.

7.3 TECHNOLOGY ADVANCEMENT

The District Governing Board approved creation of the Technology Advancement Program in March 2010 to accelerate development of technologies that can help reduce emissions in the Valley. Meeting EPA's increasingly stringent ozone and PM_{2.5} air quality standards will require significant advancements in low-emissions technologies from mobile and stationary sources. The Technology Advancement Program provides a strategic and comprehensive means to identify, solicit, and support technology advancement opportunities. Ongoing refinement of the program's technology focus areas targets efforts to achieve the greatest impact on the Valley's attainment and other health-based goals under the District's ozone and PM_{2.5} attainment plans.

Technology development can benefit regional and state air quality. Strategies for reducing emissions in the Valley can be enhanced through partnerships and collaborations with other air districts and state agencies. The District is currently collaborating with the ARB and the South Coast Air Quality Management District (SCAQMD) to prepare a document to outline a common vision for attainment of federal air quality standards, as well as greenhouse gas (GHG) goals and reduced exposure to toxics. The market penetration of transformative technologies will be a critical component of realizing a common vision, and the Technology Advancement Program will help to identify and support upcoming technology opportunities.

7.3.1 Technology Focus Areas

The District has structured the Technology Advancement Program to encourage participation within three focus areas:

- I. **Renewable Energy.** Renewable energy projects will focus on overcoming the barriers that prevent the use or adoption of zero-emission renewable energy sources or reduce emissions from renewable energy systems to make them cleaner than comparable non-renewable alternatives.
- II. **Waste Solutions.** Waste solutions will focus on waste systems or technologies that minimize or eliminate emissions from existing waste management systems and processes, including waste-to-fuel systems such as dairy digesters and other bio-fuel applications.
- III. **Mobile Sources.** Mobile source projects will demonstrate zero- or near-zero-emissions solutions to mobile source categories with emphasis on goods and people movement, off-road equipment, or agricultural equipment.

These focus areas represent the current needs of the Valley; they also reflect the types of proposals previously received by the District within this and other programs. Throughout implementation of this PM_{2.5} plan and future air quality plans, the District

will continue to evaluate and, if necessary, update these technology focus areas to address to the Valley's air quality challenges.

7.3.2 Demonstration Projects

The District's Technology Advancement Program has had four rounds of funding and received over 130 proposals for clean technology projects. As of 2013, the District selected 27 of the proposed projects for funding, for over \$7 million in support of clean technology demonstrations.

During the latest round of solicitations, in 2014, the District received 35 proposals and expects the total funding for selected projects to be approximately \$4 million. In addition to directly funding demonstration projects, the District actively seeks opportunities to collaborate with technology innovators in seeking additional funding. An example of this type of funding is the District's administration of the Zero-Emission Commercial Lawn and Garden Technology Demonstration, funded with State Air Quality Improvement Program funds.

Moving forward, District staff will continue to search for opportunities to support projects that build the air quality technology research and demonstration capacity of colleges and universities in the Valley. This emphasis will improve the ability of local institutions to engage in future clean-technology projects that are specifically suited to the Valley's needs. To accomplish this, staff has adapted the Technology Advancement Program scoring criteria so that projects that incorporate local colleges and universities will score higher than those that do not.

7.3.3 Interagency Collaborative Demonstration Projects

In addition to projects selected through the request-for-proposals process, the District has partnered with other air quality agencies in the state to demonstrate new and emerging technologies. Examples include the following:

- ***Under-fired Charbroiler Emission Control Demonstration***
South Coast Air Quality management District (SCAQMD) is currently conducting a demonstration project focused on control technology for under-fired charbroilers. South Coast released a program opportunity notice for this demonstration project in October 2011 to solicit proposals from control device manufacturers. District staff assisted in reviewing the submitted proposals and provided recommendations. This technology demonstration effort is testing promising prototype emission control devices, which will support future regulatory efforts at both South Coast and the District.
- ***Zero-Emission Commercial Lawn and Garden Equipment Demonstration***
The Cordless Zero-Emission Commercial Lawn and Garden Equipment Demonstration Program will provide eligible cordless zero-emission commercial lawn and garden equipment to commercial landscape professionals (participants) who conduct business within the Valley. The cordless zero-emission lawn and

garden equipment must be designated commercial-grade and used by commercial landscape professionals to complete multiple small to large gardening tasks over an eight-hour workday period. Eligible equipment may include, but is not limited to, lawn mowers, edgers, trimmers/brush cutters, hedge clippers, blowers/vacuums, sweepers, and chainsaws.

The District, working with the California Air Resources Board on this demonstration project, opened a Request for Applications on August 20, 2012. The Cordless Zero-Emission Commercial Lawn and Garden Equipment Demonstration Program successfully ended in June 2013 with a total of 4 technology demonstrators, 60 participants and 445 pieces of equipment for in-use testing. The program demonstrated the performance and durability of electric equipment in non-residential applications to accelerate marked acceptance and build upon the progress already made in the residential sector.

- ***Natural Gas-Fired, Fan-Type Central Furnaces with Reduced NO_x Emissions***

South Coast conducted a demonstration project focused on prototype natural gas-fired fan-type central furnaces with reduced NO_x emissions. South Coast released a program opportunity notice for this demonstration project in February 2010, which solicited a number of proposals from furnace manufacturers and gas industry technology developers in partnership with furnace manufacturers. The District co-funded this technology assessment with the SCAQMD and Southern California Gas Company (SoCal Gas). The technology assessment project was completed in the first quarter of 2014. Results of the furnace demonstration project show that the technology required to meet new NO_x standards will be available by 2015. As a result of the study findings, the District amended Rule 4905 in January 2015 and incorporated more stringent NO_x emissions limits for units subject to the rule and expanded applicability to include units installed in commercial buildings and in manufactured homes.

- ***Vision for Clean Air: A Framework for Air Quality and Climate Planning***

In 2011, ARB, with the assistance of the District and South Coast AQMD, developed the *Vision for Clean Air: A Framework for Air Quality and Climate Planning*. The goal of this collaboration is to draft a common vision for mobile and stationary source strategies that integrate the need to meet federal air quality standards for PM_{2.5} and ozone, the need to reach California's GHG goals, and the need to reduce public exposure to toxics (e.g. diesel particulates). Through the *Vision for Clean Air* effort, the ARB, the SCAQMD, and the District have been evaluating pollutant reductions needed to meet overlapping air quality requirements for 2019, 2023, 2035, and 2050. These reductions will depend on the integration of transformative measures and emerging technologies (including zero- and near-zero emission goods movement) with long-range planning and control strategies.

7.4 LEGISLATIVE STRATEGY

Each year the District Governing Board adopts a legislative platform to guide District advocacy and policy efforts. Through state and federal lobbying efforts and delegation visits to Washington D.C., the District informs elected officials about Valley needs and concerns based on the priorities established in the legislative platform. With persistence, the District has secured support and additional incentive funding for programs critical to emissions reductions in the Valley. The following is a summary of the District's Legislative Platform for 2015.

Streamline Implementation of the Clean Air Act

Since its adoption, the Clean Air Act has led to significant improvements in air quality and public health benefits throughout the nation. However, as an area in the nation with mature local air quality management programs, the Valley has reached the point of diminishing returns. After more than 20 years since the last amendments to the CAA, many well-intentioned provisions are leading to unintended adverse consequences. The antiquated provisions of the Clean Air Act are now leading to confusion, and lack of updated congressional directive has rendered courts as policy makers.

The District recommends the CAA be amended to allow for consideration of the following critical factors:

- Upcoming health standards and associated deadlines are impossible to meet.
- The current five year review of standards is too short and has led to overlapping requirements and chaotic transitions between standards.
- Requiring contingency measures in extreme nonattainment areas is irrational and unnecessary.
- CAA Section 185 requirements for businesses in "Severe" and "Extreme" non-attainment areas to pay non-attainment penalty fees, is unfair and ineffective.
- The CAA requirements for Severe and Extreme ozone nonattainment areas to address vehicle-related emissions growth must be clarified.
- Transition to health risk-based approach in lieu of the current mass based approach.

Increase State Subvention Funding to Provide More Support for Unfunded Mandates

Local air pollution control and air quality management districts receive funds to support important local air program activities. These funds are allocated from the Motor Vehicle Account through the budget of the California Environmental Protection Agency, under the Air Resources Board section have not been adjusted for inflation or added responsibilities for over twenty years. The District supports an increase in subvention funds to help offset increases in costs and responsibility. The District currently receives \$900,000 per year which is less than 2% of the District's annual operating budget.

Policies/Guidelines for the Carl Moyer Program

The Carl Moyer Program has been a valuable source of incentive funds to obtain voluntary emissions reductions from mobile sources of emissions; funding has recently

been extended through 2023. The following policies should guide the state as new guidelines/requirements are developed for the program through the new sunset date:

- The focus of the Carl Moyer Program should continue to be the reduction of criteria pollutants. Efforts to include GHG emissions projects should only be considered as co-benefits to projects that are principally designed for the reduction of criteria pollutant emissions.
- Regional funding formulas should continue to utilize a region's non-attainment status, and the severity of the air quality problem, as the primary factor in determining the regional breakdown of statewide Carl Moyer funding.
- With respect to regulatory deadlines, incentive funding should be decoupled from regulatory enforcement. Projects that provide cost-effective and surplus emission reductions should be eligible for funding regardless of compliance status with respect to regulatory deadlines.

Cap and Trade Revenues

The cap and trade program implemented by ARB sets up a mechanism by which affected sources can procure allowances or offsets to meet specified and declining caps on their GHG emissions. This scenario can potentially lead to adverse impacts in areas that are already disproportionately impacted by criteria pollutant emissions. The Cap and Trade Program generates in excess of \$1 billion annually. The state allocates these funds to programs across a number of state agencies. The following overarching policies should be applied as the state considers funding projects and programs from the Greenhouse Gas Reduction Fund:

- Projects funded with Cap and Trade revenues should achieve GHG reductions, with priority given to projects that achieve reductions in criteria pollutants as well.
- A portion of Cap and Trade revenues should be directed to projects in areas that are already disproportionately impacted by air pollution.
- Policies should be put in place to ensure that programs funded with Cap and Trade revenues meet or exceed the provisions of Senate Bill 535 that require a minimum of 25% of the Cap and Trade revenue be spent to benefit disadvantaged communities and that 10% of the revenue be spent in those communities.

Oppose Climate Change Measures that Result in Public Health Detriment Due to Increases in Criteria or Toxic Air Emissions

Although climate change measures provide for many co-benefits in reducing both GHGs and criteria pollutant emissions, there are some measures that may lead to increases in criteria pollutant or toxic emissions. Therefore the District will support reasonable climate protection measures that reduce GHG emissions as well as toxic and criteria pollutants. The District will oppose climate change measures that are detrimental to public health by leading to increases in toxic or criteria pollutant emissions in already impacted areas.

Disadvantaged Community Policies

The Valley is home to a number of disadvantaged communities that deserve care and attention. The District will adhere to the following principles in pursuing efforts to identify and address the needs of these communities:

- Support measures that improve quality of life and economic welfare. In identifying communities of need, both socioeconomic and environmental impacts should be considered. The District supports CalEPA's California Communities Environmental Health Screening tool (CalEnviroScreen) as the appropriate tool for identifying disadvantaged communities.
- The District considers poverty as a key factor contributing to diminished public health and will oppose efforts that lead to "redlining" these communities and inhibit economic growth.
- The District will support efforts to target additional state and federal resources to mitigate issues faced in disadvantaged communities.
- The District will oppose measures that dilute local control by diverting local revenues or the authority over the expenditure of local resources to the state or federal government. Reduced local control will weaken local enforcement programs. Local agencies are better suited to efficiently and effectively identify and address community needs.

Seek funding and other support from ARB and EPA to install and operate additional air quality monitoring instruments throughout the Valley

The District operates one of the most extensive air monitoring networks in the nation. Data from these monitors is utilized to measure progress and assess the need for further reductions needed to attain National Ambient Air Quality Standards (NAAQS) established by EPA. The District is also committed to providing accurate and timely air quality information to educate and empower the public to protect themselves during poor air quality episodes. This is accomplished utilizing the air monitoring data through the District's first-in-the-nation Real-Time Air Advisory Network (RAAN).

Installation, operation and maintenance of the District's air monitoring network is resource intensive. The District's annual operating appropriation for air monitoring is approximately \$2.9 million. The increase in federal mandates relating to air monitoring (more monitors and more labor intensive QA/QC and reporting procedures for existing monitors) combined with the need for more monitoring capabilities to satisfy the District's initiative to provide neighborhood by neighborhood air quality information require additional resources.

Support efforts that provide for cost-effective alternatives to open burning of agricultural waste

Given current energy policy in California, biomass power facilities, which are one of the primary alternatives to agricultural burning, are in jeopardy. Many biomass plants in the Valley are nearing the end of their long-term contracts with utilities and find themselves in a position where the power that they provide is not the type of power that utilities are seeking and that the prices being offered for new contracts are too low to support their operations. The District will support efforts to help level the playing field and provide fair competition between biomass plants and other renewable sources of power. The

District will also support research and development of alternatives to the open burning of agricultural waste.

Technology Advancement

Meeting the newest air quality standards will require transformative measures and technologies to achieve near zero emissions. In order to further develop technology to close the gap in required emissions reductions, the District operates a Technology Advancement Program. Along with its own resources, the District is seeking state and federal assistance to advance technology in the following areas:

- Mobile sources projects that demonstrate zero- or near-zero-emissions solutions to mobile source categories with emphasis on goods and people movement, off-road equipment, or agricultural equipment.
- Renewable energy projects that focus on overcoming the barriers that prevent the use or adoption of zero-emission renewable energy sources or reduce emissions from renewable energy systems to make them cleaner than comparable non-renewable alternatives.
- Waste solutions projects that focus on waste systems or technologies that minimize or eliminate emissions from existing waste management systems and processes, including waste-to-fuel systems, such as dairy digesters and other bio-fuel applications.

Support adequate resources and policies to reduce the impact of wildfires and their attendant public health impact

Wildfires result in significant loss of life and property and the associated air pollution well exceeds the total industrial and mobile source emissions in the Valley. These emissions result in significant adverse public health impacts in the Valley and in many regions throughout California. Reducing wildfires and the resulting air pollutants requires a sustained and multi-faceted approach that employs effective measures to reduce fuel supplies and adequate resources to manage fires when they occur. The District supports policies and initiatives that would encourage rapid disposal of the fuel supply, including the following:

- Additional financial and staffing resources for public and private land managers to conduct prescribed burning as an effective means for reducing fuel supplies that lead to large and uncontrollable wildfires.
- Additional resources to manage wildfires when they occur.
- Lessening or removal of contradictory environmental protection policies that prohibit the use of mechanized methods, or prescribed burning to reduce fuels when those are the only feasible methods available.
- Changes in the federal policies that better incorporate air quality concerns by shifting focus to prescribed burning and employing fire management techniques that reduce air quality impact when wildfires occur.

7.5 PUBLIC OUTREACH

The District's outreach programs are integral to the development, implementation, and success of attaining federal air quality standards. In addition, engaging the public in efforts to reduce emissions is a key element of the District's attainment strategy. Education increases public support for new and controversial regulations. The District's education and information program has expanded and evolved over the years. The following outreach programs are some examples of District programs related to health-based PM_{2.5} control measures and strategies.

Real-Time Air Advisory Network (RAAN)

The District launched the Real-time Air Advisory Network (RAAN) in 2010. This program is the first communication network in the nation to provide automated notification of poor or changing local air quality to the public throughout the air basin. While the District initially developed the program for schools as a tool to determine appropriate levels of outdoor activity for their students, the District expanded the program in 2011, and it is now available to all Valley residents.

The District combines local air quality information with specific, concentration-based health recommendations that allow RAAN subscribers to make informed decisions about when and for whom outdoor activities should be limited. The knowledge that exercise magnifies the health risks of PM_{2.5} exposure motivated the District to develop the RAAN program. Anyone can subscribe to RAAN at no charge through the District's website (www.valleyair.org); once subscribed, the District will send email notifications with a link to the real-time data of the closest monitoring station within the District's extensive monitoring network.

Real-Time Outdoor Activity Risk (ROAR)

To support the expanded RAAN program, the District developed the Real-time Outdoor Activity Risk (ROAR) scale. The levels of this scale provide specific recommendations and limitations for increasing levels of activity, from recess through competitive athletic events. This scale is based on the Air Quality Index system that is used for the daily air quality forecasts, but provides more detailed activity recommendations based on the latest health science. The ROAR system, when used in conjunction with the Air Quality Flag Program and daily air quality forecasts, is part of a comprehensive set of tools available to schools and the public for effective health protection.

Web-based Archived Air Quality System (WAAQS)

Following-up on the success of the RAAN program, the District develop a system that would provide air quality conditions on a neighborhood by neighborhood scale as opposed to being limited to only the readings from monitors. This project was organized through a three phase approach as described in the following table.

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Table 7-3 Phased Implementation of WAAQS

Phase	Date	Description
I	Completed in 2014	This phase established a modeling technique for quantifying neighborhood level ozone and PM2.5 concentrations. The District has already used this modeling technique to generate neighborhood level ozone and PM2.5 concentrations for each of the approximately 3,600 grid cells (4 km x 4 km) that make up the Valley dating back to 1990. This data is being used as the foundation for providing historical air quality information under Phase II of this project
II	Beta version released on 3/1/2015	<p>The District committed to provide an online tool to the public that will allow residents to view historical air quality information for their neighborhood by simply entering an address of their choosing. This newly developed system has been named the Web-Based Archived Air Quality System (WAAQS).</p> <p>The neighborhood level air quality statistics that will be provided to the public consist of the following:</p> <ul style="list-style-type: none"> • Number of days with Good air quality • Number of days with Unhealthy air quality • Days over federal standards for ozone and PM2.5 • Neighborhood air quality compared to trends for the County and San Joaquin Valley <p>The District will accept and consider in a continuous effort to improve the information provided on the web page.</p>
III	Launching in 2016	This phase will give the public access to real-time air quality information on a neighborhood by neighborhood basis and ensure that Valley residents have the most detailed and accurate information with which to make decisions regarding outdoor activity.

Check Before You Burn

The Check-Before-You-Burn outreach program is critical to the implementation of District Rule 4901—Wood Burning Fireplaces and Wood Burning Heaters. Rule 4901 and the Check-Before-You-Burn program are credited with reducing levels of PM2.5 emissions during the winter season to historically low levels. The rule and outreach program together have achieved the highest level of public recognition and compliance of any District program, with 80% of Valley residents professing awareness of it based on a 2014 public survey.³

Annual Check-Before-You-Burn outreach campaigns feature District Governing Board members in outdoor, radio, and video media speaking to the public about how to get involved in clean air activities. The District also uses extensive social media posts (Facebook and Twitter) to reach even more segments of the Valley's population. In addition, the District's toll-free information line and website receives thousands of "hits"

³ San Joaquin Valley Air Pollution Control District: Memorandum to SJVUAPCD Governing Board, District's Public Opinion Survey Relating to Residential Wood Burning and Other Habits of Valley Residents. Fresno, CA: Public Governing Board Meeting, March 20, 2014. Available at http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2014/march/final/09.pdf

during the wood-burning season, specifically to access wood-burning forecast information.

Healthy Air Living

Most of the District's outreach activities and programs are covered by the Health Air Living umbrella. As a year-round message, the Healthy Air Living idea of "make one change" promotes and encourages Valley residents and businesses to implement voluntary measures to reduced emissions and improved air quality. Many of the emission-reduction recommendations address PM2.5 emissions, either directly emitted or as byproducts of other pollutants (e.g. reducing the number of miles traveled in a car reduces NOx and, therefore, particulates). Components of the Health Air Living message include *Blue Sky, Brown Sky; It's Up To You* kids activity kits aimed at elementary school students and their parents; the *Healthy Air Living Kids Calendar* for kindergarteners through high-school students; and *Healthy Air Living Pledge Cards*, which are customized for residents, businesses, schools, and faith-based organizations.

7.6 ADDITIONAL STRATEGIES

Non-regulatory strategies help accelerate attainment and have been an important part of recent District air quality attainment plans. The following strategies are supported by the District as alternative methods to reduce emissions in the Valley.

Energy Efficiency

The District's involvement in energy efficiency and renewable energy is guided by its Regional Energy Efficiency Strategy (REES), which was adopted in January 2010.⁴ This policy identifies the District's commitment to fostering energy efficiency and clean energy alternatives as opportunities for emissions reductions. The District continues to work with stakeholders and state agencies to expand net metering and feed-in tariffs for use of solar and other renewable energy sources, promote energy efficiency programs for energy end users that will result in lower emissions and a more stable electrical distribution system, and develop measures that incentivize and encourage low-emission technologies for use of waste gas as an alternative to waste-gas venting or flaring.

Eco-driving

Eco-Driving refers to everyday techniques that drivers can do to maximize the fuel economy of their vehicles. These include observing good operating maintenance, such as proper tire pressure, wheel alignment, and oil viscosity; improving aerodynamics; traveling at efficient speeds; choosing the appropriate gear for manual transmissions; driving defensively to avoid unnecessary braking; accelerating at a constant pace; and other simple, yet often forgotten, driving techniques. As with other informational activities conducted by the District, an Eco-Driving program could be encompassed under the Healthy Air Living umbrella.

⁴ San Joaquin Valley Air Pollution Control District. (2010). *Approval of the District's Regional Energy Efficiency Strategy*. Memorandum to the SJVAPCD Governing Board. Public Hearing, January 21, 2010. http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2010/January/Agenda_Item_7_Jan_21_2010.pdf

Green Purchasing and Contracting

Valley businesses and government agencies can get involved in air quality improvements by considering the environmental impacts when making purchasing and contracting decisions. Green purchasing and contracting is the selection of goods, services, and vehicles that have a reduced impact on human health and the environment when compared with other products that serve the same purpose.

The District has created the guideline: *Green Purchasing and Contracting: A guide to reducing environmental impacts through the procurement process.*⁵ The District has also set an example for other agencies by adopting and implementing its own Green Procurement & sustainable Practices Policy in January 2012. The District will continue to support Valley organizations in adopting policies and practices to make green purchasing and contracting a routine part of their operations.

Alternative Energy

The District encourages cleaner ways of generating electricity and mechanical power, and moving vehicles, in addition to overall reductions in energy use. These alternative energy choices include renewable energy, waste-to-energy systems, and alternative fuels and vehicle technologies. The District also encourages the use of alternative energy sources that are clearly cleaner than industry standards in terms of criteria pollutants. The *District's Alternative Energy: On the Fast Track to Clean Air*⁶ is a guideline for considering clean energy options in the Valley that discuss, and provide additional resources for, the District's current recommendations regarding the most advantageous and viable alternative energy systems. Some examples of alternative energy options include solar energy, wind turbines, biomass, dairy digesters, and electric irrigation pumps.

⁵ SJVAPCD. *Green Purchasing and Contracting: A guide to reducing environmental impacts through the procurement process.* Available at http://www.valleyair.org/Programs/FastTrack/2011/GreenPurchasingReport4-6-11%20_2_.pdf.

⁶ SJVAPCD. *Alternative Energy: On the Fast Track to Clean Air. A Guide for Considering Clean Energy Options in the San Joaquin Valley.* Available at <http://www.valleyair.org/Programs/FastTrack/2011/Alternative%20Energy.pdf>