Chapter 5

Attainment Strategy

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Chapter 5: Attainment Strategy

The District's strategy for attaining the 2008 8-hour ozone standard builds upon adopted strategies from previous District plans and strategies implemented by the California Air Resources Board (ARB). The District strategy is a multi-faceted approach that uses a combination of conventional and innovative control strategies. This comprehensive strategy includes regulatory actions; incentive programs; technology advancement programs; policy and legislative activities; public outreach, participation, and communication; and other innovative strategies. As supported by extensive photochemical modeling conducted by ARB, the significant emissions reductions achieved by this comprehensive strategy in the coming years are projected to bring the Valley into attainment of the 2008 8-hour ozone standard by the 2032 deadline.

5.1 COMPREHENSIVE REGULATORY CONTROL STRATEGY

Air quality improvements in the Valley document the success of the District's innovative and effective rules. Between 2007 and 2015 NOx emissions have been reduced by 249.4 tons per day, despite an 8.1% increase in population. These measures include both stationary and area source control measures as well as ARB rules for mobile sources.

The District's regulatory authority is centered on 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—but not regional agencies like the District—can directly regulate tailpipe emissions from mobile sources. 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 Indirect Source Review and Employer-based Trip Reduction to reduce emissions from mobile sources within the District's limited jurisdiction over these sources.

5.1.1 Current Regulatory Control Strategies

The District has implemented a comprehensive regulatory control strategy for over twenty years. 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 Valley document the success of the District's innovative and effective rules. The District's stringent and innovative rules on stationary and area sources have set benchmarks for California and the nation. However, the District's regulatory authority is limited to stationary and some area sources. The California Air Resources Board (ARB) shares jurisdictional authority of reducing emissions from area sources in California, and as such, has adopted many stringent regulations to reduce

emissions from these sources. The District's and ARB's rules currently in place will ensure emissions will continue to be significantly reduced in the coming years. These existing stringent control measures will provide the necessary emissions reductions to complement those already achieved and contribute to ozone air quality improvements in the Valley and attainment of federal air quality standards.

5.1.1.1 District Regulations

The District's current rules and regulations reflect technologies and methods that are far beyond minimum required control levels. The aggressive regulations already adopted under previous District attainment plans (*2007 Ozone Plan, 2008 PM2.5 Plan, 2012 PM2.5 Plan, 2013 Plan for the Revoked 1-hour Ozone Standard, 2015 Plan for the 1997 PM2.5 Standard*) serve as the basis for this *2016 Ozone Plan*. These adopted regulations will reduce emissions of oxides of nitrogen (NOx) and volatile organic compounds (VOCs) as they are fully implemented over the upcoming years, contributing to the Valley's progress toward attainment of the 2008 8-hour ozone 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.

The following table identifies many of the adopted District rules achieving new emissions reductions in and after 2012, the base year for this plan. However, even pre-2012 emissions reductions are contributing and will continue to contribute to the Valley's progress toward attainment.

Table 5-1 Adopted District Rules Achieving Reductions in and After 2012

District Rules		*Date Adopted or Last Amended*
4103	Open Burning	4/15/2010
4307	Boilers, Steam Generators, and Process Heaters 2 to 5 MMBtu/hr	5/19/2011
4308	Boilers, Steam Generators, and Process Heaters 0.075 to <2 MMBtu/hr	11/14/2013
4311	Flares	6/18/2009
4306/ 4320	Boilers, Steam Generators, and Process Heaters >5 MMBtu/hr	10/16/2008
4352	Solid Fuel Fired Boilers, Steam Generators and Process Heaters	12/15/2011
4354	Glass Melting Furnaces	5/19/2011
4565	Biosolids, Animal Manure, and Poultry Litter Operations	3/15/2007
4566	Organic Material Composting Operations	8/18/2011
4601	Architectural Coatings	12/17/2009
4605	Aerospace Assembly and Component Coating Operations	9/20/2007
4653	Adhesives and Sealants	9/16/2010

District Rules		*Date Adopted or Last Amended*
4682	Polystyrene, Polyethylene, and Polypropylene Products Manufacturing	9/20/2007
4684	Polyester Resin Operations	9/20/2007
4702	Internal Combustion Engines	8/18/2011
4905	Natural Gas-Fired, Fan-Type Residential Central Furnaces	1/22/2015
9610	State Implementation Plan Credit for Emission Reductions Generated Through Incentive Programs	6/20/2013

5.1.1.2 ARB Regulations – Area Sources

As previously mentioned, the District and ARB share responsibility to regulate emissions from area sources of emissions in the Valley. Table 5-2 includes a list of all the regulations adopted or amended by ARB since 2000 that are applicable to area sources.

Table 5-2 Adopted ARB Regulations – Area Sources

ARB Regulation	Adoption Date	Category
Consumer Products Regulation	11/18/2010	Consumer Products
Aftermarket Catalyst Requirements	10/25/2007	Stationary
Vapor Recovery from Above-Ground Storage Tanks	6/21/2007	Stationary
Phase 3 Reformulated Gasoline Amendments	6/14/2007	Stationary
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
Airborne Toxic Control Measure for Stationary Compression Ignition Engines amendments	05/26/2005	Other
Airborne Toxic Control Measure for Stationary Compression Ignition Engines	12/11/2003	Other
Airborne Toxic Control Measure for Outdoor Residential Waste Burning	02/21/2002	Other
Distributed Generation Guidelines and Regulations	11/15/2001	Other
Architectural Coatings	6/22/2000	Stationary
Air Toxic Control Measure for Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Facilities	04/27/2000	Other
Enhanced Vapor Recovery	6/22/2000	Stationary

5.1.1.3 ARB Regulations

Since 1989, ARB has adopted and amended a number of regulations aimed at reducing exposure to diesel particulate matter (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.

Table 5-3 includes a list of all the regulations adopted or amended by ARB since 2000 that are applicable to area sources. Phased implementation of these regulations will produce emission reduction benefits through 2017 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 the Cleaner In-Use Heavy-Duty Trucks, the Cleaner In-Use Off-Road Equipment, the Advanced Clean Car Program, the Enhanced Fleet Modernization Program, and the Enhanced Smog-Check Program, will be achieving significant emissions reductions critically needed to attain the ozone standard under this plan.

Table 5-3 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
Clean Up Existing Harbor Craft	11/15/2007	Other
Voluntary Accelerated Retirement Regulation	12/07/2006	On-road
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

ARB Regulation	Adoption Date	Category
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
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

ARB Regulation	Adoption Date	Category
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

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, and administers incentive programs. ARB's goal is to provide readily accessible and clear information for all 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.

5.1.2 Evaluation of Potential Future Regulatory Control Strategies

The District has evaluated all sectors and equipment types for additional emission reduction opportunities, as presented in Appendix C. The District has used the following key factors to evaluate potential emission reduction opportunities:

- **Technological Feasibility.** The District looked for any control technologies not already required that might be available to further reduce emissions from sources of air pollution in the Valley. This includes new technologies and technologies that may not have been cost-effective in the past. The technologies used in BACT guidelines; permits; and other air districts' rules, regulations, guidelines, and studies were reviewed for their feasibility, including how commercially

available the technology currently is and whether the technology has been used in practice.

- **Cost-Effectiveness.** Cost-effectiveness is the cost of emissions controls compared to the amount of emissions reductions that would be achieved by those controls. The District does not have a pre-determined cost-effectiveness threshold, but control options with extremely high cost-effectiveness (high dollars per ton of pollutant reduction) are unreasonable and inappropriate for regulation.

- **Reasonably Available Control Technology (RACT).** RACT is the lowest reasonable emissions limit that a particular source is capable of meeting, considering technological and economic feasibility of the technology. RACT changes over time as new technologies become feasible and cost-effective, thus making them reasonable to require. The District has conducted comprehensive reviews of all NOx and VOC rules for compliance with federal RACT requirements. For these reviews, the District evaluates all District rules against federal rules, regulations, and technology guidelines, as well as any comparable rules and compliance methods from California's most technologically progressive air districts. In response to the District's *2009 RACT SIP* and related rule amending projects, EPA has issued federal actions documenting their approval of District rules and their concurrence that District rules are at least as stringent as RACT levels. In fact, these efforts show that many District rules are more stringent than established RACT standards. The District adopted its *2014 RACT Demonstration for the 8-Hour Ozone State Implementation Plan (2014 RACT SIP)* on June 19, 2014 to satisfy requirements for the 2008 8-hour ozone standard. The *2014 RACT SIP* analysis shows that the District continues to meet or exceed RACT for all applicable EPA source categories.

  RACT is, by definition, reasonable. Although air quality attainment plans must include a thorough analysis of reasonably available measures, it need not analyze every conceivable measure; reasonableness must drive the analysis. The District would not require any measure that is absurd, unenforceable, impractical, or socioeconomically disruptive.

Per Sections 182(b)(2) and 182(f) of the federal Clean Air Act, ozone nonattainment areas are required to implement reasonably available control technology (RACT) for sources that are subject to control techniques guidelines (CTG) issued by EPA and for major sources of volatile organic compounds (VOCs) and oxides of nitrogen (NOx), which are ozone precursors (see Chapter 3).

In response to the District's *2009 RACT Demonstration for Ozone State Implementation Plans* (*2009 RACT SIP*) and related rule amending projects, EPA has issued federal actions documenting its approval of District rules and its concurrence that District rules are at least as stringent as RACT levels. In fact, these efforts show that many District rules are more stringent than established RACT standards. The District adopted its 2014 RACT SIP on June 19, 2014 to satisfy requirements for the 2008 8-hour ozone

standard. The 2014 RACT SIP analysis shows that the District continues to meet or exceed RACT for all applicable EPA source categories. In addition, the continued RACT status of District rules has been confirmed repeatedly by the extensive analysis performed under the District's *2012 PM2.5 Plan*, *2013 Plan for the Revoked 1-hour Ozone Standard,* and *2015 Plan for the 1997 PM2.5 Standard*. This *2016 Ozone Plan* continues to build on the foundation established by these previous plans.

Each control measure evaluation in Appendix C includes a discussion of the rule applicability, an overview of the emission inventory and an evaluation for the technological feasibility and cost effectiveness analysis of identified potential emissions reductions opportunities. Technologies or work practices that reduce emissions beyond the stringent control levels already in place and determined to be technologically feasible and cost effective for implementation in the Valley are then committed to in this plan for future rule adoption or amendments, provided the result is a reduction in emissions that will assist the Valley in attaining federal air quality standards.

5.1.3 New Regulatory Control Measure Commitments (TBD)

Upon completion of the development of this *2016 Ozone Plan* the District will propose potential commitments to the District Governing Board for their consideration during a public hearing. The proposed commitments will be summarized in this section of this chapter with the full supporting analyses presented in Appendix C.

5.1.4 Further Study Commitments (TBD)

The District is thoroughly reviewing the Valley's current emissions sources and emissions control measures in search for additional control measure opportunities. In some cases there may be a need for additional information regarding the effectiveness of existing or potential controls. If such cases arise, the District will propose a commitment to conduct a further study and present to the District Governing Board for their consideration during a public hearing. Any proposed Further Study commitments will be summarized in this section of this chapter with the full supporting analyses presented in Appendix C.

5.2 MOBILE SOURCE CONTROL STRATEGY

As the District continues to develop new attainment plans to address the latest federal ozone and PM2.5 standards in the coming year, significant additional emissions reductions are expected, particularly with respect to mobile sources under ARB and EPA jurisdiction that make up over 85% of remaining Valley NOx emissions.

ARB has adopted numerous mobile source control measures. In 2012, ARB adopted the On-Road Heavy-Duty Diesel Vehicles (In-Use) Regulation (later readopted in 2014). The regulation requires diesel trucks and buses that operate in California to reduce emissions by replacing older trucks with newer diesel vehicles, retrofitting engines, and

installing diesel particulate filters. This rule has already achieved significant emission reductions will continue to achieve additional emission reductions.

In addition to heavy duty trucks, other higher-emitting heavy-duty vehicles with long service lives can remain on the road for many years. To address this legacy fleet, ARB adopted heavy-duty vehicle in-use control measures to significantly reduce PM and NOx emissions from existing diesel vehicles operating in California. These recent in-use control measures include:

- Drayage (Port or Rail Yard) Regulation;
- Public Agency and Utilities Regulation;
- Solid Waste Collection Vehicle Regulation;
- ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling;
- Heavy-Duty Diesel Vehicle Inspection Program;
- Periodic Smoke Inspection Program;
- Fleet Rule for Transit Agencies;
- Lower-Emission School Bus Program; and
- Heavy-Duty Truck Idling Requirements.

In 2012, ARB also adopted California's Advanced Clean Cars program, a new emissions-control program for model years 2017 through 2025. Upon full implementation in 2025, consumer vehicles will produce 75% less emissions.

Although the District does not have the authority to directly regulate the mobile sources themselves, the District, in addition to providing incentives, has developed and implemented the following innovative control strategies to reduce emissions from these sources.

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, 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)

Although the District does not have authority to regulate tailpipe emissions, the District can adopt regulatory approaches to promote the reduction of vehicle miles traveled. The goal of eTRIP 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 eTRIP, the rule was built with a flexible, menu-

based approach. Using 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. See www.valleyair.org/tripreduction.htm for further information about the eTRIP Rule.

Rule 9510 Indirect Source Review (ISR)

The District's adoption of Rule 9510 in 2005 was the first time in the nation that an air agency used regulation to control emissions from indirect sources. Clean Air Act Section 110(a)(5)(C) defines an indirect source as a "facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution." The District's ISR rule reduces mobile source emissions from new development projects. ISR's on-site mitigation component encourages beneficial changes in land development patterns and practices. The off-site mitigation option applies assessed ISR fees to the District's cost-effective emissions reductions incentive programs. The District conducts extensive outreach on ISR and prepares an annual report on ISR implementation. The District's 2010, 5-year evaluation of ISR implementation noted that, in spite of economic downtown in the construction industry, ISR has achieved emission reductions and has resulted in positive changes in land development practices and processes in the Valley. No other air district has a rule quite like the District's ISR rule. As such, the District's rule is the most stringent and effective ISR rule.

5.3 HEALTH RISK REDUCTION STRATEGY

In September 2010, the District's Governing Board adopted the groundbreaking Risk-Based Strategy (RBS), which was later rebranded to the Health Risk Reduction Strategy (HRRS) in 2013. These policies were developed because the District recognizes that the Valley has a mature air quality program that has made considerable progress in reducing air pollutants on a mass basis, which has led to a steady escalation in costs per ton of pollution abatement. At the same time, new scientific discoveries are paving the way for more targeted, health-based control strategies that deliver greater health benefits in a more cost effective fashion. In other words, the strategies are designed to focus limited resources on measures that have been shown scientifically to provide the best benefit for public health. As a result, the District puts a greater emphasis on implementing control measures targeted at reducing health risks, such as the effects discussed in Section 1.3.1. Since its implementation, the District's HRRS has gained significant support from EPA, the scientific community, and industry representatives.

5.3.1 What is the Health Risk Reduction Strategy (HRRS)?

The conventional mass-based regiment for attaining federal air quality standards generally measures progress in protecting public health by comparing the total amount of emissions reduced on a Valley-wide basis to the Valley's target for total emissions needed for attainment based on modeling and worst-case projections. For example, under ozone attainment plans, progress is measured by the mass quantity of either NOx or VOC reduced across the Valley over time, regardless of the actual ozone concentration reductions and associated health benefits achieved by strategies throughout the Valley. In contrast to this broad approach for planning and measuring progress, the District implements its diverse control measures and strategies throughout the Valley with clear and quantifiable public health benefits that are not fully accounted for under the conventional approach.

Additionally, driven by a rapidly expanding body of scientific research, there is now a growing recognition that from an exposure perspective, the NAAQS metrics for progress are a necessary but increasingly insufficient measure of total public health risk associated with air pollutants. In particular, control strategies for sources of ozone do not necessarily account for qualitative differences in the nature of their emissions. Differences in the relative potency of ozone precursors, VOCs in particular, are not captured by a strict, mass-based approach to precursor controls. Thus, while the federal air quality standards and plan process are motivated by public health, the process set forward under the federal CAA does not guarantee that the public health benefits of control strategies will be maximized. In contrast, the HRRS does the following:

- Applies to regulatory, incentive, and outreach strategies
- Public health is the primary driver for prioritizing clean air actions by the District
- Recognizes that risk to the public is not always proportional to the mass rate of emissions; examples include:
    - NOx versus VOCs
    - Photochemical reactivity of VOCs
- Clean air strategies with the highest benefit to public health are prioritized first regardless of mass, such as control strategies for the following:
    - Lawn care emissions
    - Gross-polluting vehicles
- Greater weight given to emissions reductions in Environmental Justice communities ("Action Zones")
- Greater weight given to reducing pollutants that are most effective in improving public health, such as:
    - NOx reductions versus VOC reductions
- All decisions are science-based; District continues to invest in Valley-specific research on population exposure and risk

5.3.2 Implementation of the Health Risk Reduction Strategy

To reduce ozone-related health risks, the District implements the HRRS through a number of strategies. A number of District programs have been influenced by the underlying principles and goals of the HRRS and provide a model of the success and added potential benefits possible under this strategy. The following are some examples:

- **Prioritizing NOx reductions over VOC reductions in *2007 Ozone Plan* and *2013 Plan for the Revoked 1-Hour Ozone Plan (2013 Ozone Plan)*** – NOx emissions reductions have been demonstrated through numerous research studies and modeling efforts to be the most effective control strategy (precursor) for reducing the formation of ozone in the Valley, with VOC reductions found to be much less effective than NOx reductions in reducing ambient ozone concentrations. The *2007 Ozone Plan* and *2013 Ozone Plan* place great priority in reducing NOx emissions, and maximize the reduction of ambient ozone concentrations and associated health benefits.

- **Grant funding priority for reduction of NOx emissions** – NOx is a criteria pollutant and a precursor to both ozone and particulates. The reduction of NOx in the Valley is vital for the District to expedite attainment of both PM2.5 and ozone air quality standards and associated health benefits. Given its health-based significance, the Public Benefit Grants Program, Technology Advancement Program, and other grant programs prioritize projects that maximize NOx reductions.

- **Prioritized adoption of strategy commitment for reducing emissions from high-polluting residential and commercial lawn mowers** – Through the District's popular Clean-Green-Yard-Machine grant program, the District has replaced over 3,900 high-polluting gas-powered lawn mowers with clean electric mowers, thus decreasing the urban, localized health risks associated with the use of gas-powered equipment. The District has also expanded its lawn care strategy to the commercial sector by funding over 175 commercial lawn and garden projects.

- **Grant funding priority for reduction in motor vehicle emissions through "Tune-In Tune-Up" vehicle repair and vehicle scrappage programs** – Emissions produced from vehicle travel significantly contribute to the air quality problem in the Valley, with mobile sources as the leading contributor of air pollution in the Valley. Motor vehicle emissions are also one of the biggest sources of pollution in the Valley's urban population centers, and reducing vehicle emissions will provide for expedited public health benefits to Valley residents. Within this context, environmental justice communities facing the highest social and environmental vulnerabilities also face significant air quality and economic impacts resulting from the disproportionally higher number of older, high-polluting vehicles driven by residents of these communities. Given

this health-based significance, the District prioritizes grant funding for programs that reduce motor vehicle emissions in low income communities. Vouchers have been offered for the replacement of older high-emitting vehicles with newer cleaner vehicles, and the Tune-In Tune-Up program offers vouchers for emissions-related repairs to high-emitting vehicles. Tune-In Tune-Up has focused its outreach in Valley environmental justice communities and has received a large level of interest, with over 3,000 vehicle repair vouchers offered to Valley residents.

- **Grant funding priority for emissions reductions in environmental justice communities** – Environmental justice communities typically have a higher exposure risk to air pollution and are consequentially more vulnerable to the associated adverse health effects caused by poor air quality. The District's Governing Board has prioritized grant funding for emissions reductions that provide benefits for environmental justice communities. One example of this is that the Public Benefit Grants Program provides significant scoring consideration for projects that benefit environmental justice communities.

- **Expanded outreach to environmental justice communities through permitting process** – Historically, the District has allowed extensive public review and input into the air quality permit issuance process, with procedures that extend beyond minimum state and federal requirements. The District has continued to enhance its permit issuance outreach efforts in environmental justice communities through increased workshops in those communities, expanded multilingual outreach, and increased utilization of web resources to make project information more easily available.

- **Timely air quality information provided to public through Real-Time Air Quality Advisory Network (RAAN)** – Launched in 2010, the District's innovative RAAN system uses real-time data from air monitoring stations throughout the Valley to provide hour-by-hour air quality updates to schools and other subscribers. Subscribers can use this information to make informed decisions and plan outdoor activities for times with the best air quality, reducing potential air quality health risks.

- **Air Quality Index (AQI) and Daily Air Quality Forecasting** – an AQI is a color-coded designation for the day that projects the forecasted air quality and recommends corresponding activity modifications based on pollution levels.

- **Air Alerts** – an Air Alert is a notification that the Valley is currently experiencing conditions that may lead to a federal ozone standard exceedance. When the District calls an Air Alert, Valley residents and businesses are advised to put into place measures that reduce vehicle use to proactively reduce emissions and protect public health.

- **Web-Based Archived Air Quality (WAAQ) System** – The WAAQ System is a revolutionary web application developed by the District to let anyone retrieve historical neighborhood air quality information. A user can provide a specific address or location in the Valley and the system will retrieve various air quality information for that specific neighborhood displayed as a graphical chart. There are also options to compare air quality trends on a year-to-year basis.

- **Tracking and sponsoring of health research** – In 2010–2011, the District sponsored the first major epidemiological investigation of health effects of air pollution in the Valley, focusing on the populations of Modesto, Fresno, and Bakersfield. The study found that daily exposure to high PM2.5 concentrations was significantly correlated with increased daily hospital and emergency room admission rates for asthma and other respiratory and cardiovascular diseases especially for those aged 19 and younger. In 2012, the District sponsored a follow-up epidemiological study to examine which of the chemical species found in Valley PM2.5 are most highly correlated with elevated ER and hospital admission rates. Results are expected to be published in the near future. In 2010, the District sponsored a pilot study of PM0.1, known as ultrafine particles, in Fresno. UCSF-Fresno investigated the quantity and spatial distribution of PM 0.1 plumes from motor vehicles, lawn care equipment, wood burning, and restaurants. Currently the District is funding a UC Davis research project to develop a model of PM0.1 population exposure in the Valley based on previous Valley observational research. PM0.1 exposure will be correlated with short- and long-term health effects by making use of the large body of Valley epidemiological data that has been generated by the previous studies described above. The District will continue to seek out and fund research opportunities that further the understanding of PM-related impacts on public health.

Building off of the above strategies, this *2016 Ozone Plan* will continue to identify and prioritize control measures with the most benefit to public health. This public health-centered strategy will include the prioritization of stationary and area source control measures, mobile source control measures, incentive programs, public outreach, and other innovative strategies.

5.4 INCENTIVES

Incentive programs have become a crucial component of the District's overall strategy for achieving the emissions reductions necessary to bring the Valley into attainment. The District operates one of the largest and most well-respected voluntary incentive programs in California. Through strong advocacy at the state and federal levels, the District has appropriated $136 million in incentive funding in the 2015-2016 District

Budget.[1] Since the District's inception in 1992, considerable funding has been expended in support of clean-air projects in the Valley and 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 $653,243,285 in matching funds, with a combined District and grant recipient funding investment of more than $1.4 Billion.

Table 5-4 Summary of Grant Expenditures and Results[2]

District Incentive Funding ($)	Grant Recipient Match Funding ($)	Emissions Reductions (tons)	Cost-Effectiveness ($/ton)
$751,520,858	$653,243,285	136,177	$5,519

Over the past 15 years, the incentive programs have been used to purchase, replace, or retrofit thousands of pieces of equipment.

In addition to funding the existing core incentive programs that have traditionally achieved highly cost-effective emissions reductions, the District continues to evaluate additional potential opportunities to expand the portfolio of programs available. As new funding sources and opportunities are identified, the District will continue to look for additional incentive programs and expansions to existing programs. See Appendix E for complete details on the District's emissions reductions incentives program.

5.5 LEGISLATIVE PLATFORM

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. For complete details of the District's 2016 legislative priorities and general legislative priorities, please refer to Appendix G.

5.6 EDUCATION AND PUBLIC OUTREACH

The District's mission to protect public health by improving air quality in the Valley relies on the public's awareness and understanding of the District's air-quality improvement programs. The Valley cannot meet these public health goals on the back of businesses alone. Valley businesses are subject to some of the most stringent air quality regulations in the nation. As Valley businesses continue to be subject to additional

[1] SJVAPCD. Recommended Budget 2015-2016. p.68. (2015, May 21) Retrieved from http://www.valleyair.org/Board_meetings/GB/agenda_minutes/Agenda/2015/May/BudgetHearing/final/03.pdf

[2] As of January 1, 2016.

rounds of prohibitory regulations, the role of the public becomes increasingly important in reaching federal standards.

Emissions from public behavior such as driving, residential wood burning and lawn-care maintenance continue to be a key factor in the Valley's emissions inventory. Consequently, public acceptance of concepts such as alternative commute options, as well as specific clean-air strategies, such as Check Before You Burn, the Air Alert program and Healthy Air Living (HAL), requires widespread lifestyle changes. To that end, the District Governing Board has placed a high priority on conducting an active and effective public education and outreach program.

The District's comprehensive public education and outreach program is composed of numerous elements that are designed to allow the District to leverage opportunities to advance the District's multiple strategic objectives, such as:

- Encourage and enlist the general public to do their part to reduce air pollution
- Empower and inform the public to protect themselves during episodes of poor air quality by providing them timely air quality information as well as scientific and comprehendible information on the health effects of air pollution
- Provide accurate and objective information about Valley efforts to reduce air pollution, measurable results and achievements, and challenges that remain.

For more information about the District's public education and outreach efforts, please refer to Appendix H.

5.7 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 air pollutant emissions in the Valley. Meeting the increasingly stringent ozone and PM2.5 air quality standards requires 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. For more information on technology advancement efforts by the District, please refer to Appendix F.