



Chapter 10

Summary of Attainment Strategy



This page intentionally blank.

Chapter 10: Summary of Attainment Strategy

This *2012 PM_{2.5} Plan* presents sound science and extensive analysis to determine which strategies would help the Valley to expeditiously attain EPA's 2006 PM_{2.5} standard. This *2012 PM_{2.5} Plan* also presents the District's comprehensive evaluation of opportunities to reduce emissions of PM_{2.5} and its precursors in the Valley. This chapter summarizes the District's resulting multi-faceted control strategy, which will generate continuous air quality improvements Valley-wide and attainment of EPA's 2006 PM_{2.5} standard in all areas of the Valley in 2019.

Public health has been the number one priority throughout this effort. Toward that end, this chapter also discusses the public health benefits that will be achieved through implementation of this plan's attainment strategy.

10.1 SUMMARY OF 2012 PM_{2.5} PLAN CONTROL STRATEGY

The District's multi-faceted control strategy includes traditional regulatory control measures as well as innovative incentive programs, technology demonstration projects, further study measures, outreach, policy initiatives and more. This plan's strategy is presented in Chapters 5 through 8 and summarized in Tables 10-1 through 10-4.

This section intentionally blank.

Table 10-1 District Regulations Contributing to Continued PM2.5 Improvement

Adopted District Regulatory Control Measures	Date Adopted/ Last Amended
Rule 4103 Open Burning	04/15/2010
Rule 4106 Prescribed Burning and Hazard Reduction Burning	1/21/2001
Rule 4204 Cotton Gins	2/17/2005
Rule 4307 Boilers, Steam Generators, and Process Heaters 2 to 5 MMBtu/hr	05/19/2011
Rule 4308 Boilers, Steam Generators, and Process Heaters 0.075 to <2 MMBtu/hr	12/17/2009
Rule 4309 Dryers, Dehydrators, and Ovens	12/15/2005
Rule 4311 Flares	06/18/2009
Rules 4306 & 4320 Boilers, Steam Generators, and Process Heaters >5 MMBtu/hr	10/16/2008
Rule 4352 Solid Fuel Fired Boilers, Steam Generators and Process Heaters	12/15/2011
Rule 4354 Glass Melting Furnaces	05/19/2011
Rule 4550 Conservation Management Practices	08/19/2004
Rule 4692 Commercial Charbroiling	09/17/2009
Rule 4702 Internal Combustion Engines	08/18/2011
Rule 4703 Stationary Gas Turbines	09/20/2007
Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters	10/16/2008
Rule 4902 Residential Water Heaters	03/19/2009
Rule 4905 Natural Gas-Fired, Fan-Type Residential Central Furnaces	10/20/2005
Regulation VIII Rules Fugitive PM10 Prohibitions	08/19/2004
Rule 9310 School Bus Fleets	09/21/2006
Rule 9410 Employer-based Trip Reduction	12/17/2009
Rule 9510 Indirect Source Review	12/12/2005

Table 10-2 ARB Regulations Contributing to Continued PM2.5 Improvement

Adopted ARB Regulations	Date Adopted
Advanced Clean Car Program	1/27/2012
Expanded Off-Road Recreational Vehicle Emission Standards	12/16/2011
Cleaner In-Use Off-Road Equipment	12/17/2010
Port Truck Modernization	12/17/2010
Cleaner In-Use Heavy-Duty Trucks	12/16/2010
Accelerated Introduction of Cleaner Line-Haul Locomotives	06/24/2010
Enhanced Fleet Modernization Program (formerly called the Expanded Vehicle Retirement Program)	06/24/2010

Adopted ARB Regulations	Date Adopted
Smog Check Improvements	08/31/2009
Portable Outboard Marine Tanks	09/25/2008
Clean Up Existing Harbor Craft	11/15/2007
Voluntary Accelerated Retirement Regulation	12/07/2006
Emergency Regulation for Portable Equipment Registration Program, Airborne Toxic Control Measures and Portable and Stationary diesel-Fueled Engines	12/06/2006
Airborne Toxic Control Measure for Stationary Compression Ignition Engines (Agricultural Eng. Exemption removal)	11/16/2006
Distributed Generation Guidelines and Regulations	10/19/2006
Zero Emission Bus Regulation	10/19/2006
Heavy-Duty In-Use Compliance Regulation	09/28/2006
On-Board Diagnostic II	09/28/2006
Off-Highway Recreational Vehicles and Engines	07/20/2006
California Motor Vehicle Service Information Rule	06/22/2006
Portable Equipment Registration Program	06/22/2006
Fork Lifts and Other Industrial Equipment (Large Off-Road Spark Ignition Engines > 1 liter)	05/26/2006
Technical Amendments to Evaporative Exhaust and Evaporative Emissions Test Procedures	05/25/2006
Diesel Verification Procedure, Warranty & In-Use	03/23/2006
AB1009 Heavy-Duty Vehicle Smoke Inspection Program	01/26/2006
Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel-Fueled Vehicles Owned or Operated by Public Agencies and Utilities	12/08/2005
Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards	12/08/2005
Marine Inboard Sterndrive Engines	11/17/2005
Requirements to Reduce Idling Emissions from New and In-Use Trucks, Beginning in 2008	10/20/2005
2007-2009 Model-Year Heavy Duty Urban Bus Engines and the Fleet Rule for Transit Agencies	09/15/2005
Portable Fuel Containers (PFC) [Part 1 of 2]	09/15/2005
Portable Fuel Containers (PFC) [Part 2 of 2]	09/15/2005
On-Board Diagnostic System Requirements for 2010 and Subsequent Model-Year Heavy-Duty Engines (HD OBD)	07/21/2005
Airborne Toxic Control Measure for Stationary Compression Ignition Engines amendments	05/26/2005
Transit Fleet Rule	02/24/2005
Off-Road Compression Ignition Engines	12/09/2004
Emergency Regulation for Temporary Delay of Diesel Fuel Lubricity Standard	11/24/2004
Diesel Fuel Standards for Harbor Craft & Locomotives	11/18/2004
Greenhouse Gas	09/23/2004

Adopted ARB Regulations	Date Adopted
Airborne Toxic Control Measure for Diesel Particulate from Diesel Fueled Commercial Vehicle Idling	07/22/2004
Urban Bus Engines/Fleet Rule for Transit Agencies	06/24/2004
Engine Manufacturer Diagnostic System Requirements for 2007 and Subsequent Model Heavy Duty Engines	05/20/2004
Heavy Duty Diesel Engine-Chip Reflash	03/27/2004
Airborne Toxic Control Measure for Diesel-Fueled Portable Engines	02/26/2004
Modifications to the Statewide Portable Equipment Registration Program (PERP) Regulations	02/26/2004
CA Motor Vehicle Service Information Rule	01/22/2004
Airborne Toxic Control Measure for Diesel Particulate for Transport Refrigeration Units	12/11/2003
Airborne Toxic Control Measure for Stationary Compression Ignition Engines	12/11/2003
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements Amendments	12/11/2003
Small Off-Road Engines (SORE)	09/25/2003
Solid Waste Collection Vehicles	09/24/2003
Off-Highway Recreation Vehicles	07/24/2003
Specifications for Motor Vehicle Diesel Fuel	07/24/2003
Zero Emission Vehicle Amendments for 2003	03/25/2003
Airborne Toxic Control Measure for Diesel Particulate from School Bus Idling	12/12/2002
Low Emission Vehicles II. Align Heavy Duty Gas Engine Standards with Federal Standards; minor administrative changes	12/12/2002
Revision to Transit Bus Regulations Amendments	10/24/2002
Diesel Retrofit Verification Procedure, Warranty and In-Use Compliance Requirements	05/16/2002
On-Board Diagnostic II Review Amendments	04/25/2002
Airborne Toxic Control Measure for Outdoor Residential Waste Burning	02/21/2002
Voluntary Accelerated Light Duty Vehicle Retirement Regulations	02/21/2002
California Motor Vehicle Service Information Rule	12/13/2001
Distributed Generation Guidelines and Regulations	11/15/2001
Low Emission Vehicle Regulations	11/15/2001
Heavy Duty Diesel Engine Standards for 2007 and Later	10/25/2001
Marine Inboard Engines	7/26/2001
Zero Emission Vehicle Infrastructure and Standardization of Electric Vehicle Charging Equipment	06/28/2001
Zero Emission Vehicle Regulation Update	01/25/2001
Heavy Duty Diesel Engines "Not-to-Exceed (NTE)" Test Procedures	12/07/2000
Light-and Medium Duty Low Emission Vehicle Alignment with Federal Standards. Exhaust Emission Standards for Heavy Duty Gas Engines	12/07/2000

<i>Adopted ARB Regulations</i>	<i>Date Adopted</i>
Air Toxic Control Measure for Chlorinated Toxic Air Contaminants from Automotive Maintenance and Repair Facilities	04/27/2000
Transit Bus Standards	02/24/2000
Off-Road Compression Ignition Engines	01/27/2000

Table 10-3 New District Regulatory Control Measures

<i>New District Regulatory Control Measures</i>	<i>Implementation Date</i>
Adopt new Rule 9610 (SIP-Creditability of Incentives): This will provide the District with a mechanism to claim SIP credit for emissions reductions through certain incentive programs.	2013
Amend Rule 4308 (Boilers, Steam Generators, and Process Heaters 0.075 to <2 MMBtu/hr)	2015
Amend Rule 4905 (Natural Gas-fired, Fan-type Residential Central Furnaces)	2015
Amend Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) to lower the burning curtailment level to prevent PM _{2.5} buildup that may lead to a potential exceedance day.	2016/2017
Amend Rule 4692 (Commercial Charbroiling) to reduce under-fired charbroiler emissions.	2017

This section intentionally blank.

Table 10-4 District Non-Regulatory Control Measure Strategy Summary

<i>Further Study Measures and Research</i>	<i>Study Completion Date</i>
Rule 4103 (Open Burning): Evaluate the feasibility of postponed burning activities every 5 years, as outlined in current rule.	2015
Rule 4106 (Prescribed Burning): Examine feasibility of a biomass removal program.	2013
Rule 4311 (Flares): Review flare minimization plans and annual reports for further emissions reductions opportunities.	2013
Rule 4550 (Conservation Management Plans): Analyze existing studies and support new studies to establish a more accurate inventory of PM2.5 emissions and identify potential additional emission reduction opportunities.	2014
Rule 4570 (Confined Animal Facilities): Analyze existing studies on ammonia at confined animal facilities and evaluate potential ammonia controls for their effectiveness in reducing PM2.5 concentrations in the Valley.	2017
SC 001 (Lawn Care Equipment): Emissions inventory evaluation and technology demonstration.	2013
SC 005 (Asphalt/Concrete Operations): Examine feasibility of warm mix asphalt.	2013
Ongoing Study and Research. Conduct and support going research that continues to enhance the District's understanding of PM2.5 concentrations and formation, including further health research in support of the District's Risk-Based Strategy.	Ongoing
<i>Potential New Incentive Measures</i>	<i>Implementation Date</i>
Ongoing Enhancements. Continue to seek additional funding to implement incentive programs and continue to support existing incentive programs for mobile sources, as appropriate.	Ongoing
Kern County Focused Incentives. The District will consider opportunities to target incentive reductions in Kern County to expedite attainment of the 24-hour federal PM2.5 standard.	Ongoing
Charbroilers. Develop new incentive program to assist in the deployment of new technologies upon their development and commercial availability.	Ongoing
Internal Combustion Engines. Consider funding new programs to further promote replacement of agricultural internal combustion engines with electric motors, including but not limited to providing additional incentives for the high cost associated with utility line extensions to remove irrigation pump installations.	Ongoing
Lawn Care. Continue to evaluate commercial lawn care technologies through the Cordless Zero-Emission Commercial Lawn and Garden Equipment Demonstration Program; once new technologies are verified as viable for the Valley, develop on-going incentive programs to encourage use of these new technologies; consider expanding the Clean Green Yard Machine program to include other eligible types of yard care equipment, including low- or zero-emission equipment.	Ongoing
Energy Efficiency. Continue to foster and incentivize programs, as appropriate, consistent with the District Regional Energy Efficiency Strategy; including but not limited to continued support of the use of state Energy Efficiency and Conservation Block Grant funds, the funding of pilot programs to assess and analyze sources to determine the potential to operate more efficiently, and funding outreach program showing government and service organizations the benefits of "going green".	Ongoing
Fireworks. Continue the incentive program for municipal laser-light shows to replace fireworks displays and to seek partners and consider sponsoring shows combining a small amount of fireworks with an otherwise predominantly laser driven show.	Ongoing

Construction Equipment Replacement. Consider providing incentives for construction fleets to replace their heavy-duty off-road equipment sooner than required by the State's In-Use Off-Road Diesel Vehicle Regulation.	Ongoing
Refuse Vehicle Replacement Program. Consider providing incentives for the replacement of older refuse trucks, with a particular emphasis in Environmental Justice and other vulnerable communities.	Ongoing
Technology Advancement	Implementation Date
Technology Advancement Program. Continue to seek additional funding and potential feasible and low-cost technologies that may provide for additional emission reduction opportunities in the Valley.	Ongoing
Kern County Focused Demonstration. The District will consider opportunities to target technology demonstration efforts in Kern County to expedite attainment of the 24-hour federal PM2.5 standard.	Ongoing
Conservation Management Practices. Commit to continue to look for opportunities to develop better CMPs through the current TAP and AgTech.	Ongoing
Charbroiling. Continue to offer funding and seek parties to participate in the District ChIP program.	Ongoing
Lawn Care. Continue the current Cordless Zero-Emission Commercial Lawn and Garden Equipment Demonstration Program.	Ongoing
Energy Efficiency. Continue to pursue technology advancement projects that may result in further emission reductions through energy efficiency.	Ongoing
Legislative Strategy	Implementation Date
Legislative Platform. Continued support for the following: viability of biomass facilities as an alternative to open burning, cleaner burning alternative fuels, the removal of contradictory environmental protection policies, additional resources to manage wildfires, and legislative measures to provide reliable water supplies to the Valley, and additional state and federal funding for incentive programs.	Ongoing
Fireworks. Take a policy stance opposing any expansion of fireworks use in the Valley, particularly if it occurs in winter months.	Ongoing
Community Outreach/Assistance	Implementation Date
Public Outreach and Education. Continue existing public outreach and education efforts and expand these efforts as opportunities become available.	Ongoing
Compliance Assistance. The District currently provides a robust education and outreach program for regulated sources through the Small Business Assistance program, Permit Stakeholder Meetings, Compliance Assistance Bulletins, and public notices for public workshops and public hearings. The District will continue to work closely with affected sources to ensure successful compliance.	Ongoing
Conservation Management Practices. Incorporate new information from research studies into education and outreach efforts as appropriate.	Ongoing
Energy Efficiency. Continue existing education and outreach efforts for energy efficiency programs in the Valley and expand these efforts when appropriate.	Ongoing
Fireworks. Continue current education and outreach efforts regarding safety hazards of fireworks. Partner with local fire and police departments for outreach efforts when appropriate, and consider sponsoring a technology demonstration of lasers at a pre-July 4 th public event to showcase the laser technology and improve public acceptance of reducing use of fireworks in the Valley.	Ongoing

10.2 Population in Attainment through Implementation of Strategy

Attaining EPA's health-based standards is an important milestone for improving public health. Through the strategy outlined in this plan, the Valley as a whole, based on Kern County, will attain the federal 24-hour PM_{2.5} standard in 2019. However, while ultimate attainment under the federal Clean Air Act is determined through a worst-case approach that considers the last portion of the Valley that reaches attainment, it is important to also evaluate progress made towards attaining the standard throughout the Valley regions and population. As discussed in Appendix A, there are a variety of metrics for evaluating air quality progress. Even where areas have not yet attained the standard, there will be continuous air quality improvements.

To take a closer look at the Valley's journey to attaining the federal standard, the District has projected air quality progress throughout the Valley as the *2012 PM_{2.5} Plan* is implemented. Using projected 2019 emissions and modeled design values; 2007 emissions and actual design values; and emissions inventory trends between 2007 and 2019,. As illustrated by Figure 10-1, the majority of the Valley will reach attainment earlier than 2019, with 53% of the Valley's population experiencing PM_{2.5} concentrations below the federal standard by 2014, and 94% of the population by 2017. Figure 10-2 further illustrates the significant progress made throughout the Valley in achieving PM_{2.5} concentrations below the standard by mapping Valley monitoring sites, and showing their expected attainment status and progress toward attainment in 2011, 2014, 2017, and 2019.

Figure 10-1 Valley Residents with PM_{2.5} Concentrations below the Federal 24-hour PM_{2.5} standard

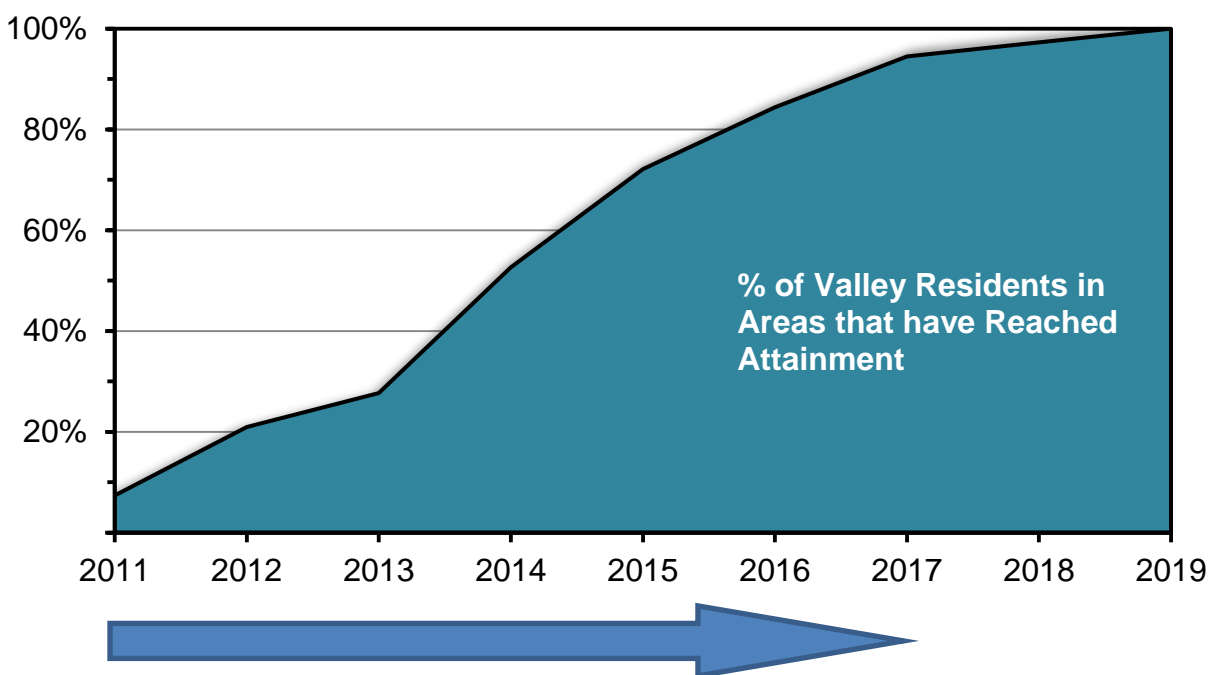
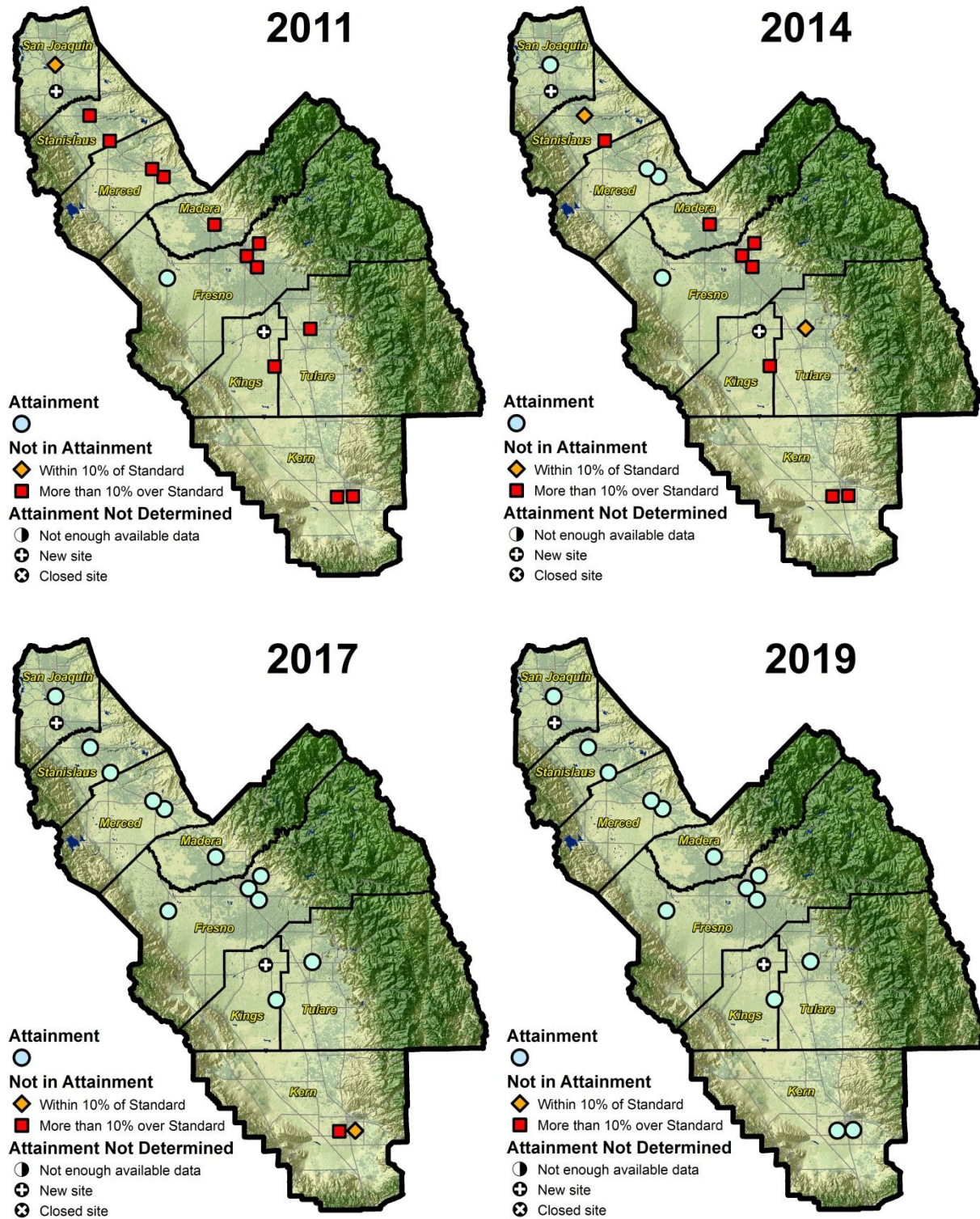


Figure 10-2: Modeled PM2.5 Attainment Status by Monitoring Site



10.3 HEALTH BENEFITS OF ATTAINMENT UNDER THE PLAN

Attaining the PM_{2.5} standard will improve public health by lowering the number of cases of certain diseases and other health impairments. The District used an EPA model (BenMAP) to estimate the number of avoided cases of various health endpoints expected to result due to reduced PM_{2.5} exposure resulting from plan implementation and attainment in 2019 (as described in Chapter 2 (section 2.5) and Appendix E). The results of this analysis are summarized in Table 10-5. Through the associated economic analysis, the District estimates that plan implementation will achieve an annual Valley-wide savings of \$102 million in health costs starting in 2019 (not including the costs or social value of premature death). See Appendix E for more information.

Table 10-5 Health Benefits Achieved Through Implementation of the Plan

Health Impact	Health Benefit (reduction in health impact)
Premature Death	671
Acute Myocardial Infarction, Hospital Admissions	93
Asthma Age 0-19, Hospital Admissions	131
Cardiovascular, Hospital Admissions	175
Asthma Age 20-99, Hospital Admissions	246
Asthma Age 20-99, Emergency Room Visits	407
Asthma Age 0-19, Emergency Room Visits	699
Acute Bronchitis	1,498
Upper Respiratory Symptoms	15,523
Lower Respiratory Symptoms	19,011
Asthma Exacerbation	114,376
Work Loss Days	125,138