

## Executive Summary

The *2012 PM2.5 Plan* will address how the San Joaquin Valley will attain the 2006 National Ambient Air Quality Standard for 24-hour PM2.5 as expeditiously as possible. **The evaluation being conducted to develop this plan is an ongoing work in progress, and will continue to be revised and updated throughout the public process.** This plan will build off of the strategies included in the San Joaquin Valley Air Pollution Control District's (District) *2008 PM2.5 Plan* and the *2007 Ozone Plan*. Through these existing plans, the District and State Air Resources Board (ARB) have implemented a number of far-reaching strategies, including the adoption of over 500 regulations and amendments. The emissions reductions achieved through these strategies have resulted in a decrease in ozone and PM2.5 concentrations, and overall improvement to the Valley's air quality. These adopted rules and programs will continue to achieve more emissions reductions over the coming years as they are fully implemented, and are expected to help the Valley make significant progress towards attainment of the 2006 PM2.5 standard.

PM2.5 (particulate matter that is 2.5 microns or less in diameter) can be inhaled deeply into the lungs. Numerous studies link PM2.5 exposure to a variety of health effects, including aggravated asthma, decreased lung function, chronic bronchitis, and premature death. The U.S. Environmental Protection Agency (EPA) establishes and periodically reviews health-based standards for air pollutants like PM2.5. States and local agencies, like the San Joaquin Valley Air District (District), then develop strategies for improving local air quality to meet EPA standards.

EPA established the first PM2.5 standard in 1997 and designated the Valley as nonattainment of the 1997 standard in 2005. The 1997 standard has two components: an annual average of 15  $\mu\text{g}/\text{m}^3$  and a 24-hour average of 65  $\mu\text{g}/\text{m}^3$ . The District adopted the *2008 PM2.5 Plan* in April 2008 to document its regulatory commitments, demonstrate the anticipated effectiveness of its PM2.5 strategy in bringing the Valley into attainment of the 1997 PM2.5 standard no later than April 2015 (based on 2012-2014 data), and meet other federal requirements.

EPA revised the 24-hour average portion of the PM2.5 standard in 2006 as a 24-hour average of 35  $\mu\text{g}/\text{m}^3$ , and subsequently designated the Valley as nonattainment of the standard in 2009. The District, in collaboration with ARB, is developing this *2012 PM2.5 Plan* to demonstrate expeditious attainment of this 2006 standard. The District Governing Board adopted Guiding Principles in February 2012 (outlined in Chapter 1), with the first guiding principle emphasizing the overall objective of this plan: "*With public health as our number one priority, meet the federal ambient air quality standards as expeditiously as practicable.*"

Scientific analysis and computer modeling is underway to determine how much more the Valley's businesses and residents will have to reduce their emissions to attain the PM2.5 standard. This evaluation is based on extensive scientific research, District and

ARB staff efforts, and review from the scientific community and public. ARB presented the Technical Approach for this analysis at a technical symposium on April 27, 2012.

To identify additional opportunities for emissions reductions that might expedite attainment of the 2006 PM<sub>2.5</sub> standard, the District is conducting an extensive evaluation of emissions sources contributing to the Valley's ambient PM<sub>2.5</sub> concentrations, particularly during the winter-time when the Valley experiences its highest concentrations. Since the Valley exceeds the 2006 PM<sub>2.5</sub> standard almost exclusively between November through February, the District's attainment strategy will be focused on efforts that can reduce emissions over these winter months.

PM<sub>2.5</sub> can be emitted directly into the atmosphere, or it can form in the atmosphere through chemical reactions of precursors. PM<sub>2.5</sub> precursors can include oxides of nitrogen (NO<sub>x</sub>), oxides of sulfur (SO<sub>x</sub>), volatile organic compounds (VOC), and ammonia. The significance of various precursors varies throughout the U.S., based on the natural environment and relative magnitude of emissions. Through extensive research and the analysis conducted for the *2008 PM<sub>2.5</sub> Plan*, reducing NO<sub>x</sub> and SO<sub>x</sub> emissions (in addition to reducing directly emitted PM<sub>2.5</sub>) have been demonstrated to be most effective in reducing the Valley's ambient PM<sub>2.5</sub> levels, whereas reducing VOC and ammonia emissions have been shown to not be effective. The District and ARB analysis in progress for this *2012 PM<sub>2.5</sub> Plan* will continue to evaluate the relationship between these various precursors and the formation of PM<sub>2.5</sub> in the Valley.

Through adoption and implementation of this *2012 PM<sub>2.5</sub> Plan*, the District – a public health agency – will improve public health for Valley residents as PM<sub>2.5</sub> levels are reduced as expeditiously as possible throughout the region.