Executive Summary

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 set the first PM2.5 standard in 1997 and designated the San Joaquin Valley (Valley) as nonattainment of the 1997 standard in 2005. The 1997 standard has two components: an annual average of 15 µg/m^3 and a 24-hour average of 65 µg/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 and designated the Valley as nonattainment of the 2006 PM2.5 standard in 2009. The 2006 standard is a 24-hour average of 35 µg/m^3. The District, in collaboration with the California Air Resources Board (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."

This *2012 PM2.5 Plan* builds off the strategies of the *2008 PM2.5 Plan*, the *2007 Ozone Plan,* and the 500+ rules and rule amendments the District adopted and implemented under previous plans. The District and ARB have adopted numerous far-reaching regulations and other programs under the 2007 and 2008 plans, and the Valley's ozone and PM2.5 air quality has already improved as a result. These adopted rules and programs will continue to achieve more emissions reductions over the coming years as they are fully implemented. Thus, the adopted emissions control measures are expected to help the Valley make significant progress towards the 2006 PM2.5 standard.

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 as expeditiously as practicable. This evaluation is based on extensive scientific research, District and ARB staff efforts, and review from the scientific community and public. ARB will present the Technical Approach for this analysis at a technical symposium on April 27, 2012. This analysis will be fully documented in future plan drafts.

To identify additional opportunities for emissions reductions that might expedite attainment of the 2006 PM2.5 standard, the District is already conducting an extensive evaluation of all emissions sources contributing to the Valley's ambient PM2.5 concentrations. PM2.5 can be emitted directly into the atmosphere, or it can form in the atmosphere through chemical reactions of precursors. PM2.5 precursors can include oxides of nitrogen (NOx), oxides of sulfur (SOx), 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. Under the analysis conducted for the *2008 PM2.5 Plan*, reducing NOx and SOx emissions has been shown to be effective in reducing the Valley's ambient PM2.5 levels, whereas reducing VOC and ammonia have been shown to not be effective. The District and ARB analysis in progress for this *2012 PM2.5 Plan* will confirm whether this precursor effectiveness is consistent between the 1997 and 2006 PM2.5 standards. Since the Valley exceeds the 2006 PM2.5 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.

Through adoption and implementation of this *2012 PM2.5 Plan*, the District – a public health agency – will improve public health for Valley residents as PM2.5 levels are reduced over time and throughout the region. In addition to creating a plan that assures expeditious attainment of the federal standards, the District will be integrating its Risk-based Strategy into the *2012 PM2.5 Plan* to ensure that control measures that achieve disproportionate health benefits are pursued and prioritized within the overall attainment strategy.