Technical Symposium

Scientific Basis of Modeling for the SJV 2012 PM2.5 Plan

San Joaquin Valley Air District
California Air Resources Board

April 27, 2012
Agenda

• Introductions and Opening Remarks
• Overview of PM2.5 Plan Development
• Nature of PM2.5 in the San Joaquin Valley
• Review of Modeling Results from CRPAQS
• Modeling for SIP Purposes
• Technical Approach for 2012 SJV PM2.5 Plan Modeling
• Question and Answer Session
  – During this workshop, webcast participants can email questions to: webcast@valleyair.org
Overview of PM2.5 Plan Development

Jessica Fierro, Plan Development Supervisor
San Joaquin Valley Air District
Introduction to the *2012 PM2.5 Plan*

- Plan for addressing EPA’s 24-hour PM2.5 standard of 35 µg/m³, as set in 2006
- Plan goals:
  - Meet federal requirements
  - Assure expeditious attainment of the standard
  - Evaluate the benefits of the significant emissions reductions that will be achieved between now and 2019 under current regulations
  - Put together the strongest plan possible, with the strongest feasible control measures
SJV PM2.5 Plan Schedule

Plan for addressing EPA’s 24-hour PM2.5 standard of 35 \( \mu g/m^3 \), as set in 2006:

- Ongoing: Scientific research, technical analyses, outreach
- April: First round of public workshops
  - April 27: District/ARB Technical Symposium on the Scientific Basis of PM2.5 Plan Modeling
  - April 30: District workshop on general plan direction
- June & August: revised drafts, workshops
- October 2012: District plan adoption
- November 2012: ARB plan adoption
- December 14, 2012: Plan due to EPA
Plan Requirements

- Analysis of PM2.5 concentrations
- Emissions inventories
- Photochemical modeling and Weight of Evidence analyze future air quality and identify emission reduction for attainment
- Emission control strategies
- Transportation conformity budgets
- Reasonable Further Progress demonstration
- Contingency measures
The Valley’s PM2.5 Air Quality

- Evaluating multiple parameters provides broader picture of air quality progress
  - “Design values:” the attainment test; 3-year averages following EPA protocols
  - “Exceedances days” (24-hr average greater than 35 \(\mu g/m^3\))
  - Air Quality Index (AQI) Trends
  - Concentrations by hour, day, and season

- Speciated data to determine types of PM contributing to total concentrations
The Valley’s PM2.5 Air Quality

PM2.5 24-hour Design Value Trends (Valley and County maximums)

- Valley
- San Joaquin
- Stanislaus
- Merced
- Fresno
- Kings
- Tulare
- Kern

PM2.5 24-hour Design Value (µg/m³)

- 65 µg/m³
- 35 µg/m³

3-Year Average

1999-2001
2000-2002
2001-2003
2002-2004
2003-2005
2004-2006
2005-2007
2006-2008
2007-2009
2008-2010
2009-2011

Includes wildfire impacts
The Valley’s PM2.5 Air Quality

Days Over the 24-hour 35 μg/m³ Standard

Year


Days

0 10 20 30 40 50 60 70 80 90 100

Modesto
Fresno-First
Bakersfield-California
Emissions Inventory

• Best available estimates of the amount of pollutants and precursors being emitted from each source type
• Inventories continuously improved
• Plan’s inventory is a snapshot reflecting best information at the time for use in modeling & control measures evaluation
• District coordinating closely with ARB to ensure accuracy
Improvements to Base Year Emission Inventory

• Point source emissions are based on District reports for 2007
• Mobile source emission estimates reflect all adopted ARB rules and the latest activity assumptions
• Key stationary and area source categories reflect economic recession, newer activity data, and/or updated emission factors
Emission Inventory Forecasts

• Forecasts to future years are essential in demonstrating attainment and maintenance of the air quality standards

• The key components are:
  • Base Year Inventory – the best estimate of current emissions
  • Growth Factors – an estimate of the annual growth or decline in the activity for each source category
  • Control Factors – an estimate of the emission reductions from adopted rules and regulations targeting specific source categories