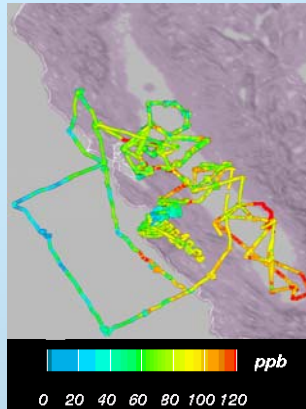


Central California Air Quality Studies Update

December 7, 2006



Outline

- Overview of Air Quality Studies
- Linkage to State Implementation Plans
- Study Accomplishments

Central California Air Quality Studies

- CCOS
Central California Ozone Air Quality Study
- CRPAQS
Central California Particulate Air Quality Study

CCCOS and CRPAQS

- Collaborative partnership of government agencies and regulated industries
- Comprehensive multi pollutant approach
- Provide scientific basis for clean air plans
- Scientific advances of national significance

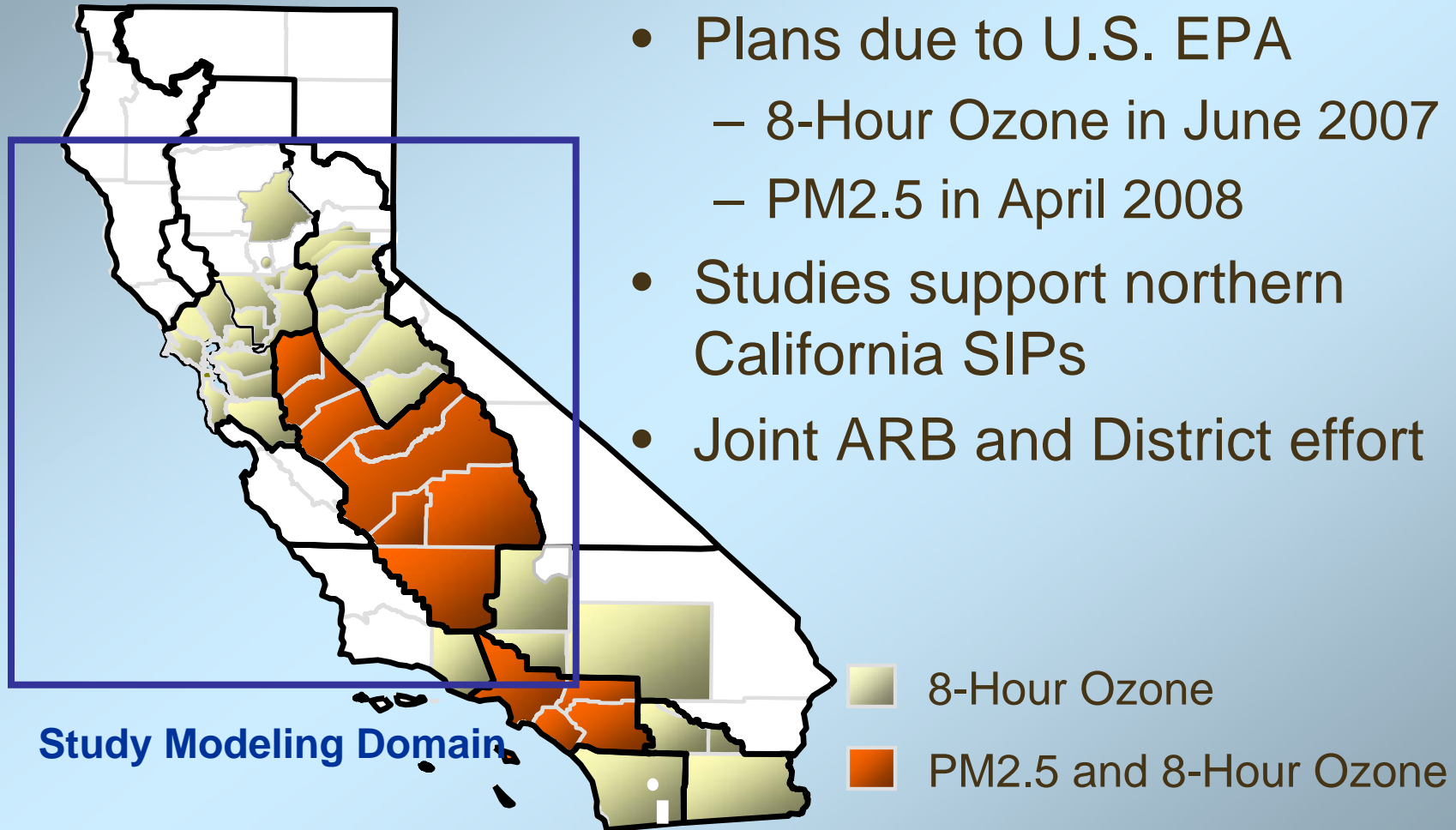
CCOS and CRPAQS Scope

- Extensive field monitoring at the surface and aloft



- Improved emission inventory
- State-of-the-science air quality modeling
- World class data base

State Implementation Plan Overview



Linkage to State Implementation Plans

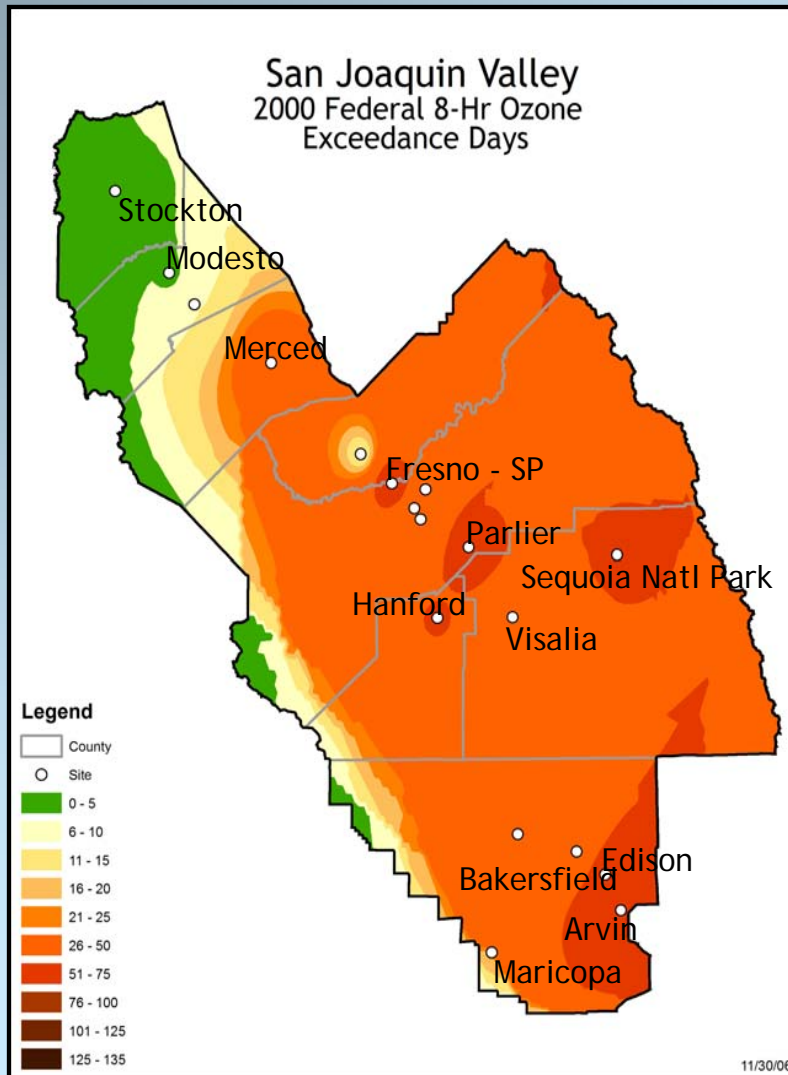
Studies support SIPs by determining:

- Where and when high concentrations occur
- Emission inventory improvements
- Sources of PM and their local versus regional nature
- Most effective emissions to control

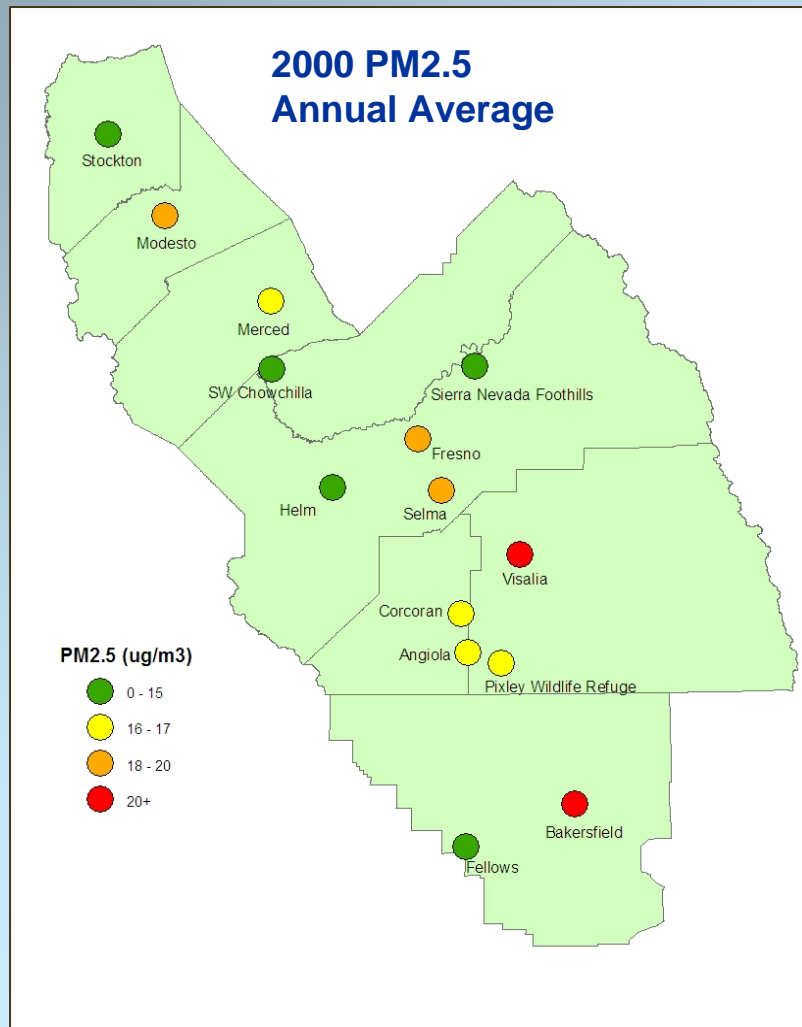
Where and when high
concentrations occur

8-Hour Ozone Exceedances

- At urban, rural, and national park sites
- Most frequent in central/southern Valley
- Over several days during the summer
- During high pressure, low wind speed, high temperature days

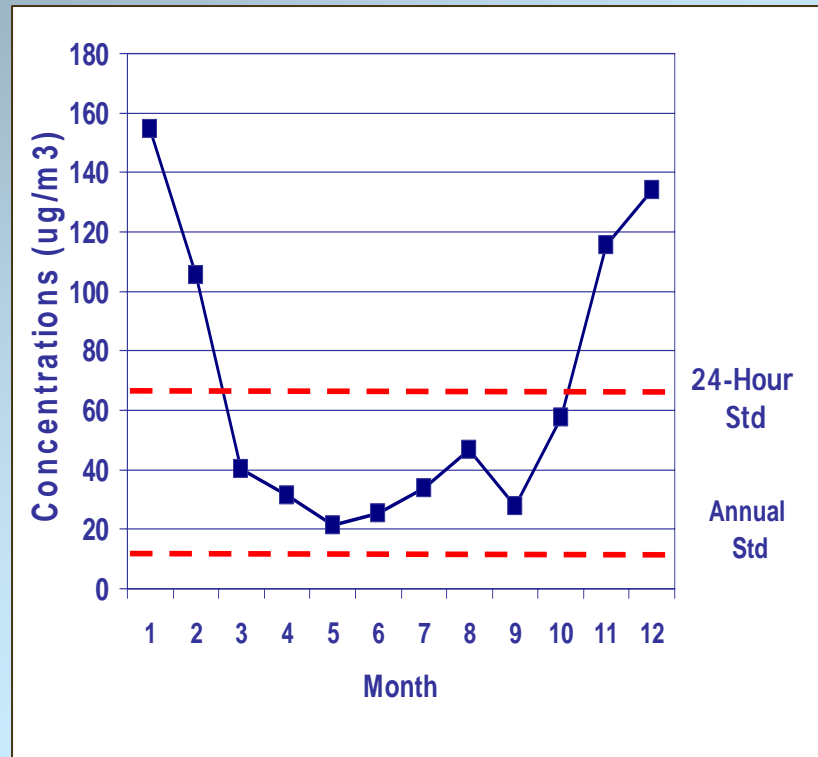


PM2.5 Varies by Location



- Highest in central and southern Valley
- Urban and rural sites can exceed standards
- Annual average and 24-hour PM2.5 a concern

PM2.5 Varies by Season



- Highest in fall and winter
- Builds up over several days to weeks (episode)
- Winter episodes during stagnant, cool, humid periods

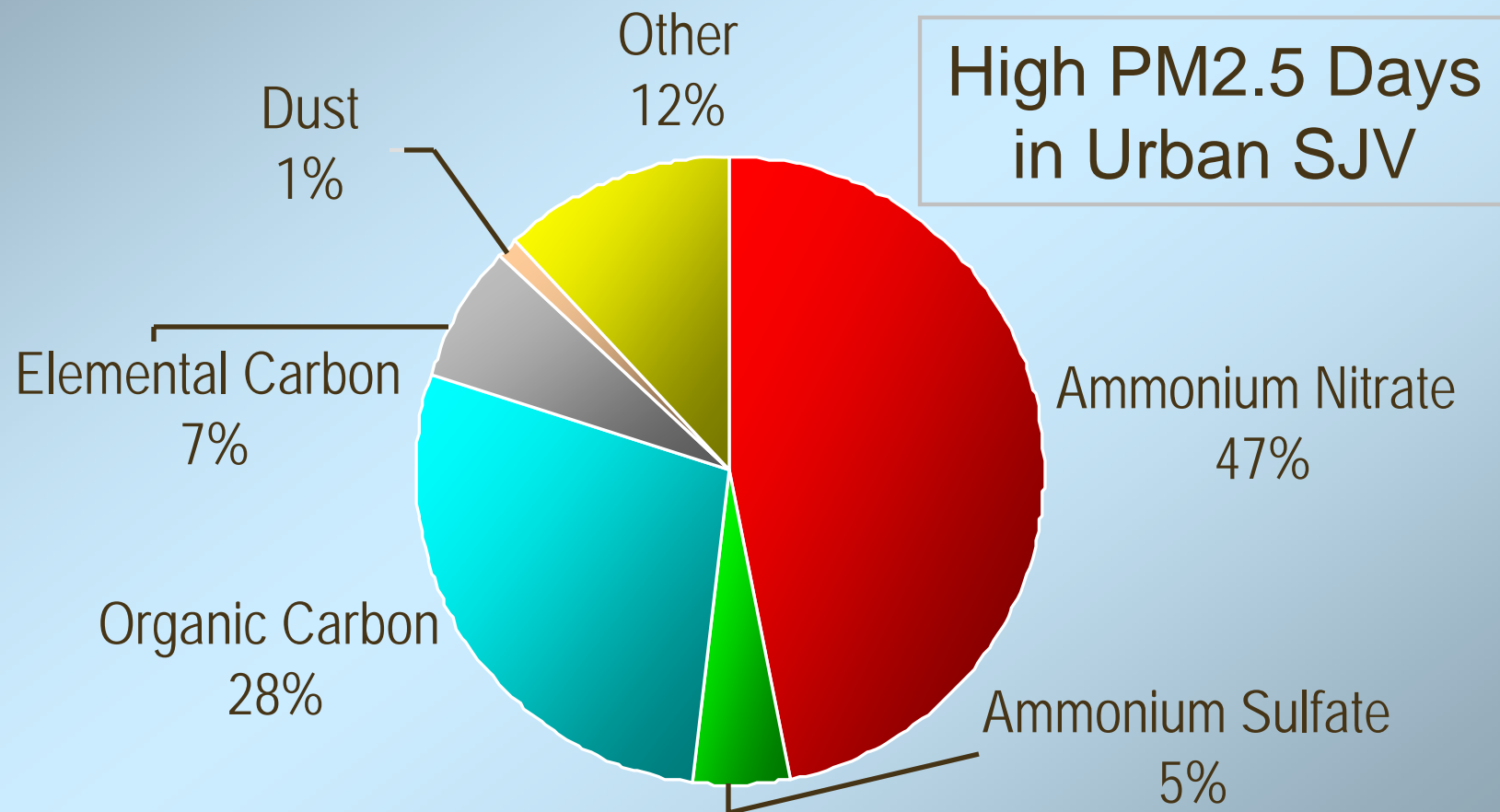
Emission inventory improvements

Study Products

- Emission estimates for seasonal sources and additional stationary sources
- Information to geographically distribute emissions
- Hourly vehicle travel data
- Detailed chemical composition of emissions

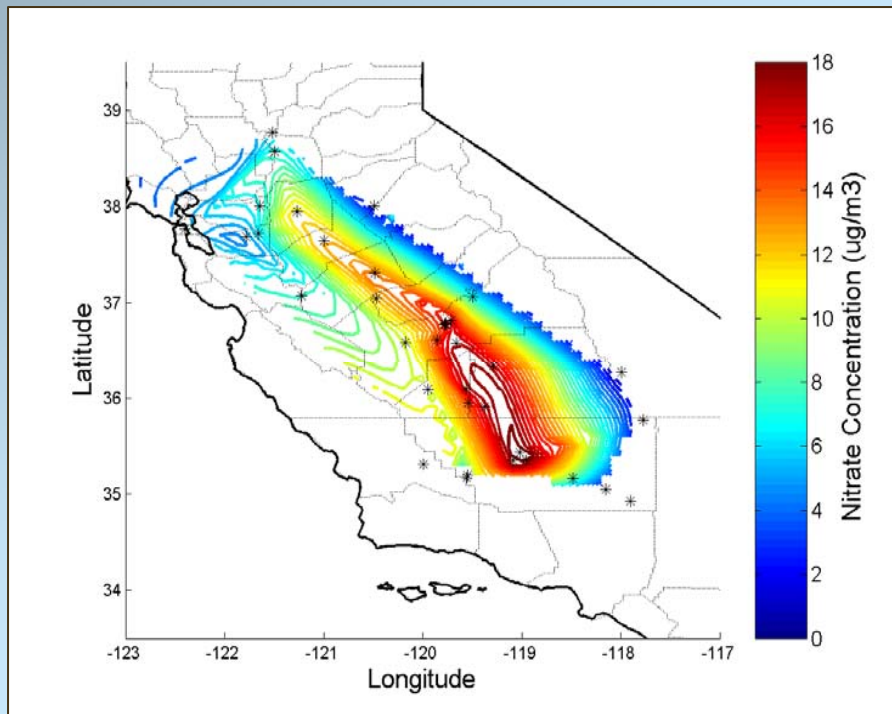
Sources of PM and their local versus regional nature

PM2.5 Chemical Constituents



Ammonium Nitrate Distribution

Wintertime

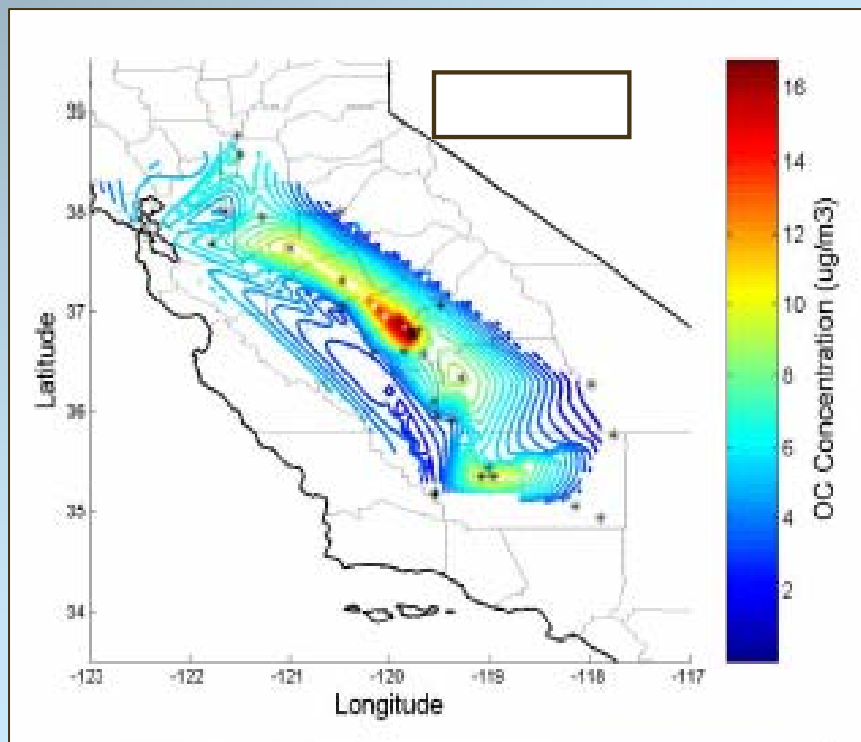


Chow et. al. 2005

- Significant fraction of $\text{PM}_{2.5}$ in winter
- High in urban and rural areas
- Extensive fog reduces concentrations

Organic Carbon Distribution

Wintertime



- Significant fraction of PM_{2.5} in winter
- High at urban sites, especially Fresno
- Residential wood burning large contributor

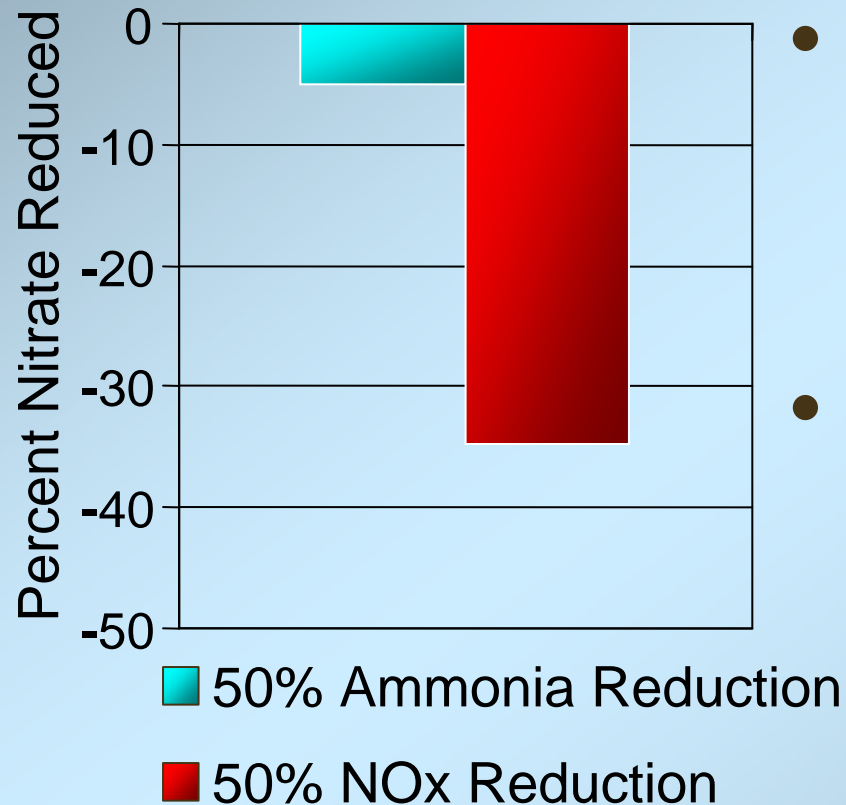
Watson et. al. 2005

**Most effective
emissions to control**

Control Approach - Ozone

- Modeled summer episodes to evaluate emission reductions needed to achieve 8-hour ozone standard
- NOx controls are relatively more beneficial, but both NOx and ROG reductions are effective in reducing ozone

Control Approach - PM2.5



- Modeled air quality during three week winter episode
- Reductions in NOx much more effective than ammonia

Integration of Results for SIPs

- Identify most effective mix of pollutants to control
- Establish attainment targets
- Evaluate specific control strategies to the extent possible

Study Wrap-up

- Policy Committee
 - Fundraising complete
 - Prioritized projects for study's final phase
 - Approve remaining contracts in 2007
 - Approve final reports in 2009
- ARB and Districts
 - Will continue collaborating on SIP process