Recommended Area Designations for the New Federal Sulfur Dioxide Standard

Air Resources Board
Planning and Technical Support Division

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Sacramento, California

Background

- New Federal 1-Hour standard adopted June 2010
- California has met the previous federal SO_2 standards for over 30 years
- State designation recommendations submitted to U.S. EPA this month
- U.S. EPA issues final designations and boundaries by June 2012

New 1-Hour SO_2 Standard

- New 1-hour standard of 75 ppb replaced 24-hour and annual average standards
- Focuses on acute health impacts
- Averaging time changed because
  - 5 minute to 1-hour exposures most strongly and consistently linked to adverse health effects
  - 24-hour and annual average standards do not ensure SO_2 concentrations below the level associated with short-term effects

Recent Health Evidence

- Stronger evidence for link between short-term exposures and adverse respiratory effects
- Symptoms include difficulty breathing and asthma exacerbation, especially during exercise
- Increased emergency room visits and hospital admissions for all respiratory illnesses and asthma

Designation Process

- Review air quality data 2007 - 2009
- Determine designation status
- Propose boundaries using U.S. EPA criteria
  - Emissions, air quality, meteorology, geography, and jurisdictional boundaries

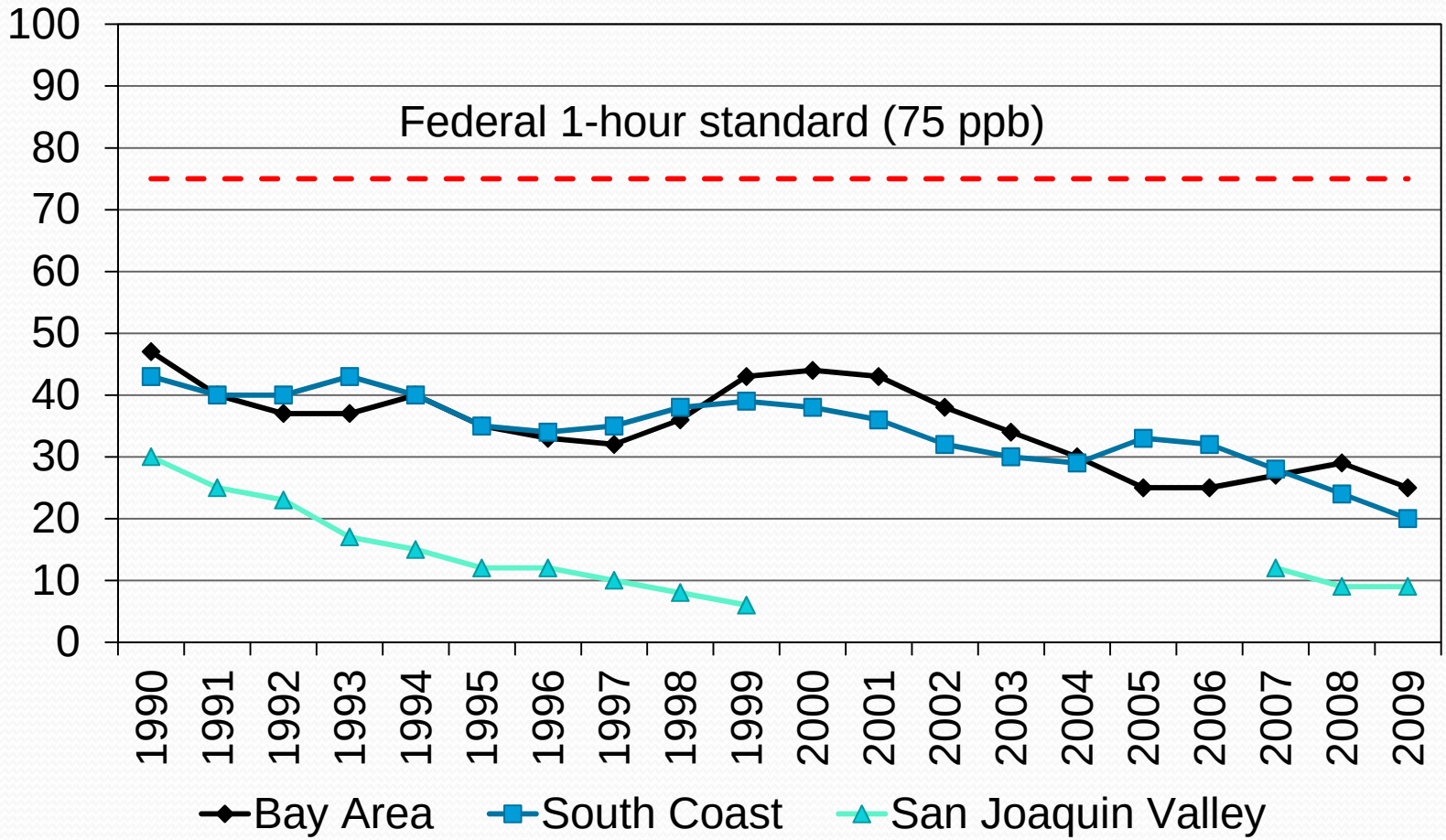
California SO_2 Emission Sources

- Ocean-going vessels
- Stationary sources
  - Petroleum refining
  - Fuel combustion
  - Mining and cement manufacturing

Statewide SO_2 Emission Trends

- Emissions have decreased 45% since 1990
- Reductions due to:
  - Improved stationary source controls
  - Lower sulfur content in fuels
  - Increased use of natural gas

SO_2 Air Quality Trends

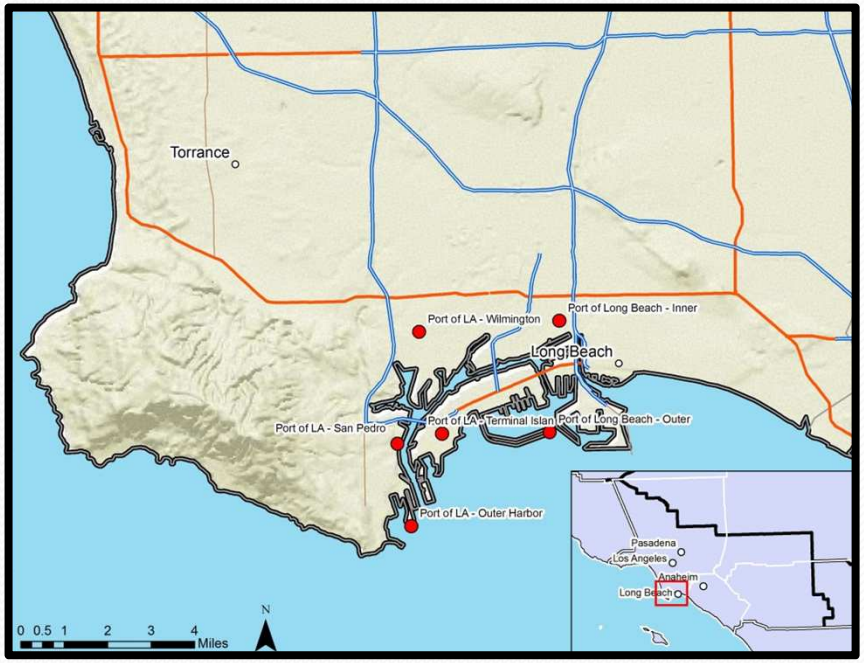


Current SO_2 Air Quality

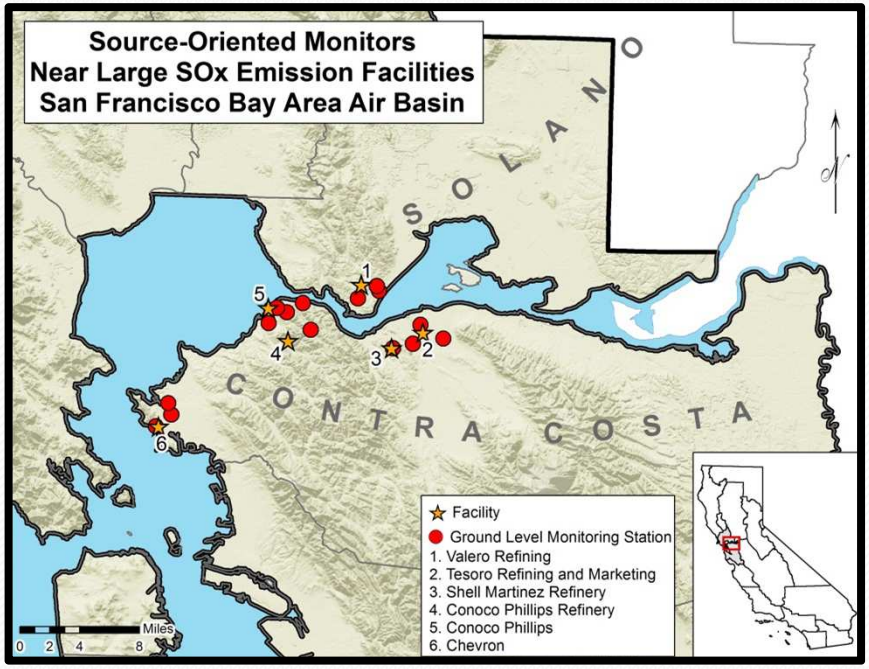
- California has a network of 39 SO_2 monitoring sites
- All sites far below standard of 75 ppb
- Urban area concentrations range from 20 ppb to 35 ppb

Special Purpose Monitoring: Ports

- Six sites characterize air quality in communities and near major port emission sources
- Concentrations between 34 ppb and 62 ppb



Special Purpose Monitoring: Refineries



- Fifteen monitoring sites around refineries in the Bay Area
- Concentrations between 1 ppb and 56 ppb

Modeling Requirements

- Air quality data must be supplemented with modeling for large stationary sources
- U.S. EPA's guidance focus on sources greater than 100 tons per year
- 34 facilities will require modeling in California
- Facilities include refineries, cement plants, mining activities, glass manufacturing, and cogeneration

California's SO_2 Modeling Activities

- Working with Districts to develop modeling protocol
- Staff will conduct modeling for smaller districts
- ARB will provide modeling results to U.S. EPA prior to final designations

Conclusion

- Monitors show that California attains the new SO_2 standard
- Staff has provided technical analysis to U.S. EPA to support attainment designation
- Modeling will be done as required