



Lead Sources and Emissions in the South Coast Air Basin

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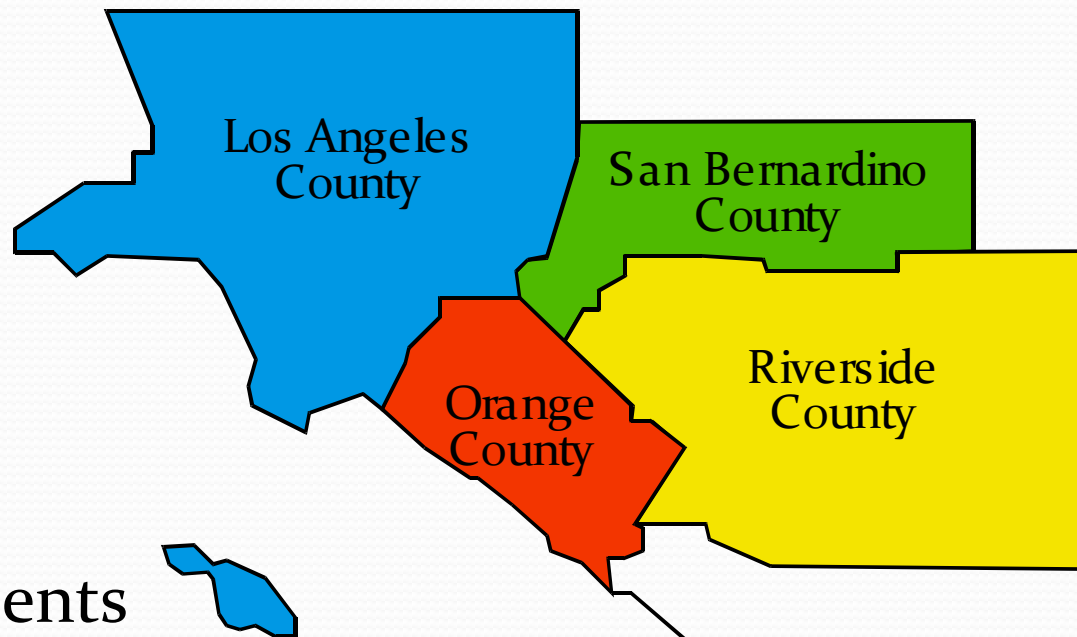
California State Senate - Select Committee on Air Quality

September 18, 2013, Los Angeles, CA

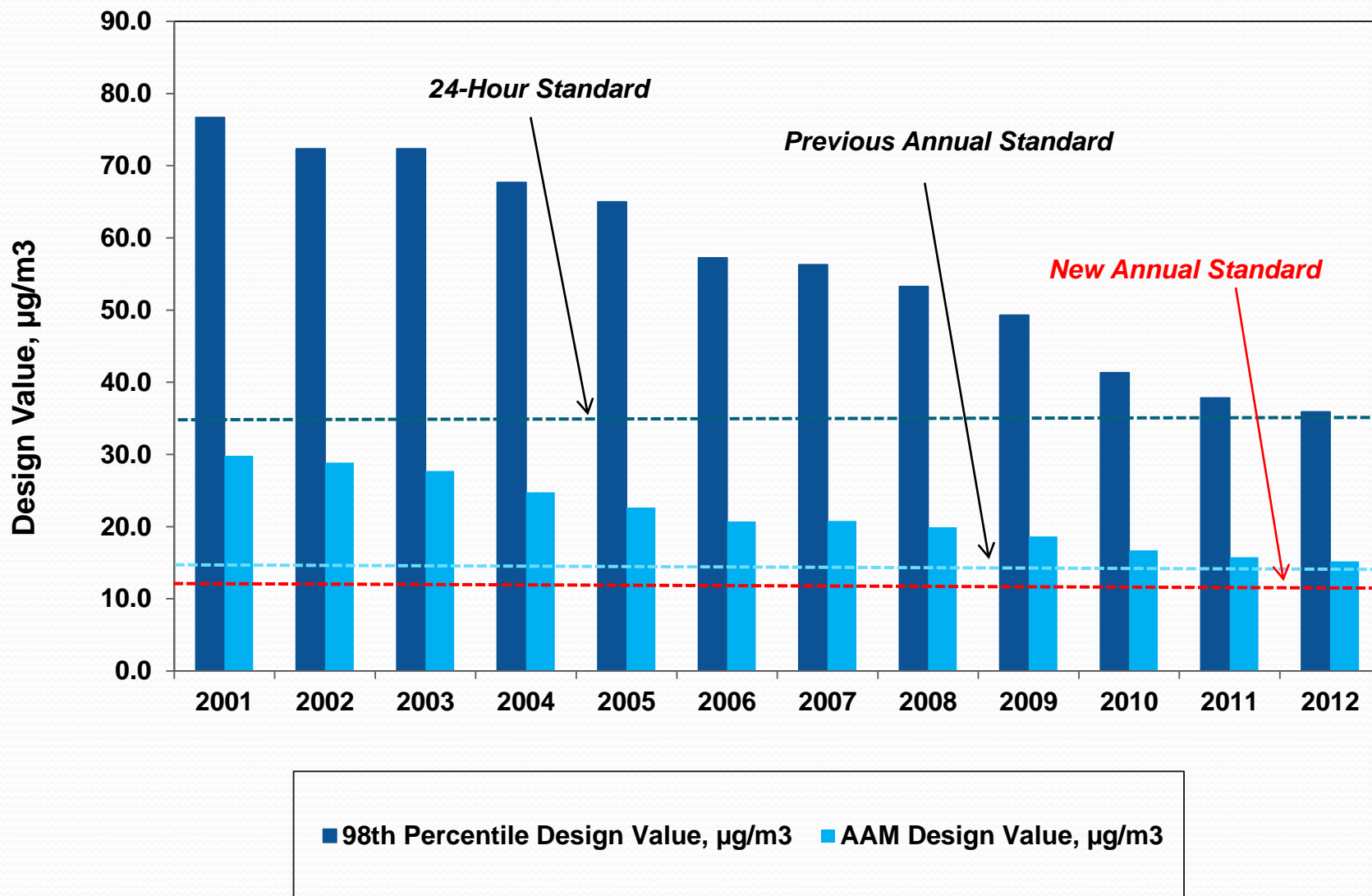
SCAQMD Jurisdiction

South Coast Basin:

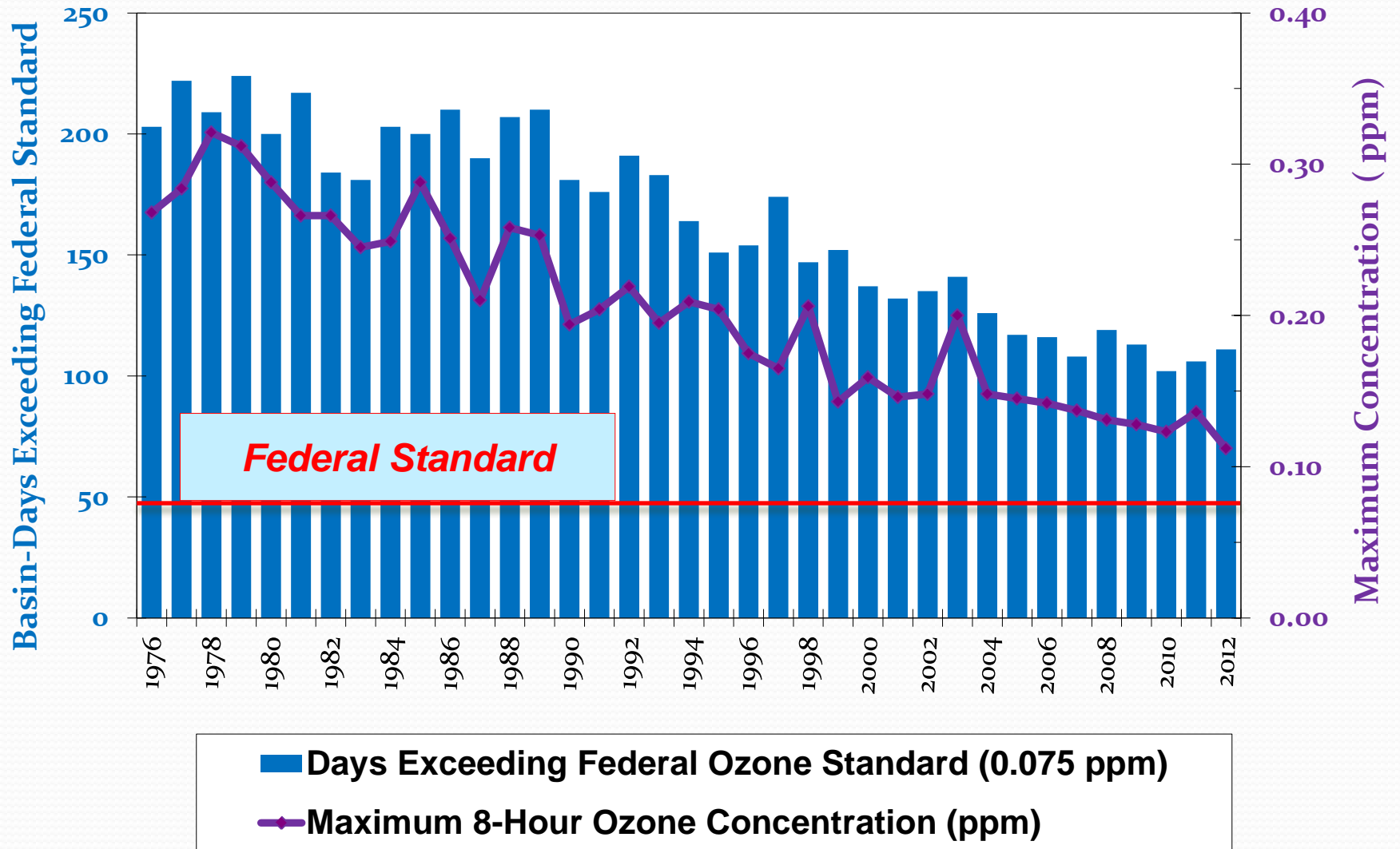
- 4-county region
- Over 10,000 sq. miles
- Almost 17 million residents
- Millions of gasoline vehicles
- Hundreds of thousands of diesel vehicles
- Combined Ports of Long Beach and Los Angeles: nation's largest cargo gateway
- Regulatory authority: primarily stationary sources



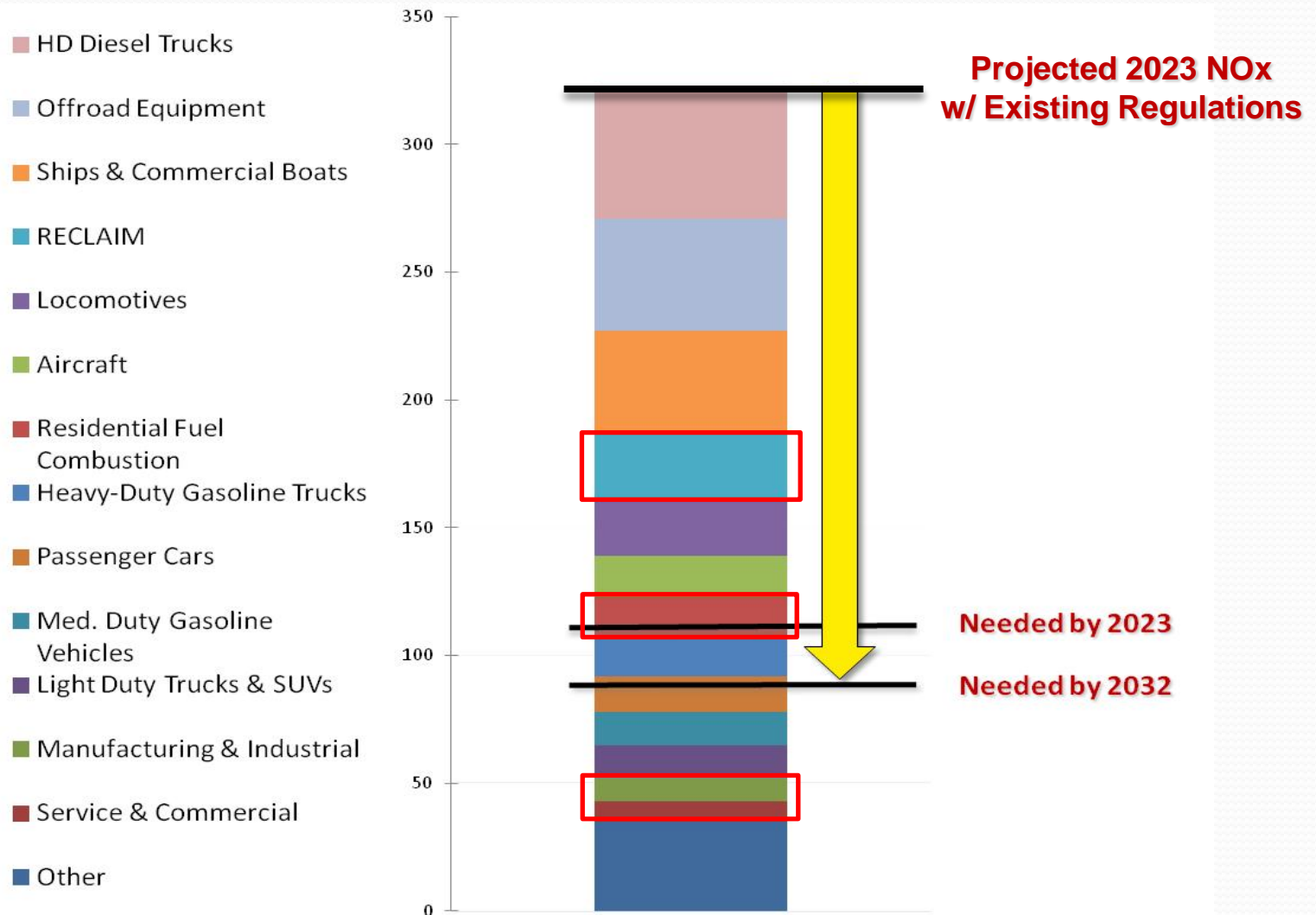
South Coast Air Basin - PM2.5 Trend



South Coast Air Basin 8-hour Ozone Trend



NOx reductions needed to meet ozone standards



* Source: Ambient ozone modeling conducted by SCAQMD, 2012; final data

Health Effects of Lead

- Cancer
 - US EPA classification: B2 (probable human carcinogen; inadequate human data, sufficient animal data)
- Non-Cancer Chronic (low concentration, long exposure)
 - Target organs: developmental, nervous, immune, kidney, blood, and reproductive systems
- Non-Cancer Acute (high concentration, short exposure)
 - Target organs: gastrointestinal, respiratory, skin, and eye systems

US. EPA Ambient Air Quality Standards

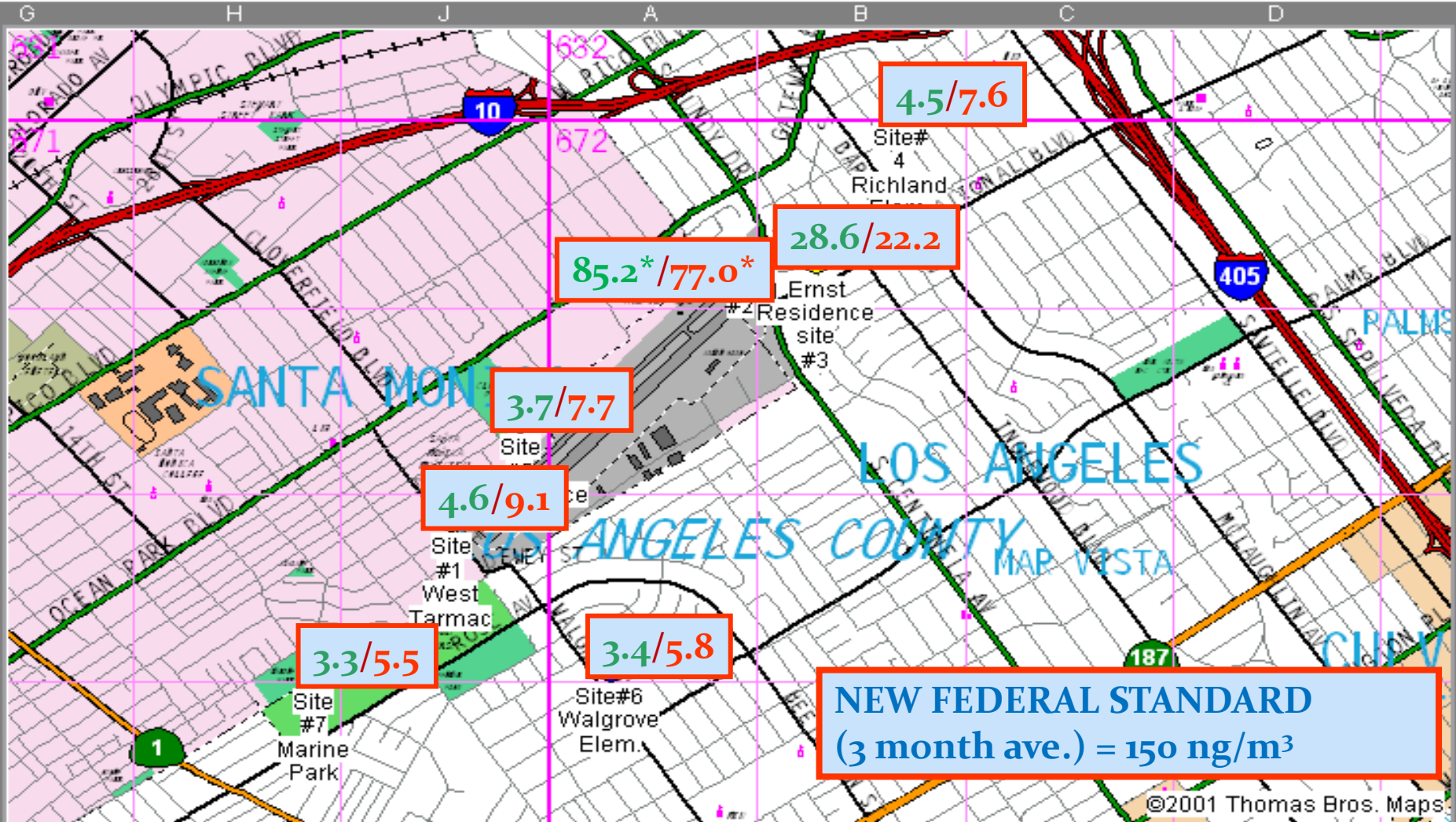
- Revised in 2008
 - Tightened from 1.5 to 0.15 $\mu\text{g}/\text{m}^3$ (3-month average)
 - Requires near-source monitoring
 - Named 15 airports for initial monitoring assessment

Lead Sources in South Coast

- Historically, lead emissions dominated by gasoline-powered motor vehicles
 - Ambient levels have dropped dramatically since lead phase-out in 1980's
- Remaining emission sources
 - General aviation airports – leaded avgas
 - Industrial stationary sources
 - Lead-acid battery recyclers (Quemetco and Exide)
- Los Angeles County is a non-attainment area for Lead due to near-source monitoring at Exide
 - Enforcement actions and SCAQMD Rule 1420.1 have reduced ambient levels to meet federal standards

Santa Monica Airport TSP Lead (ng/m³)

Phase I - Apr 06 - Jul 06, Phase II - Oct 06 - Feb 07



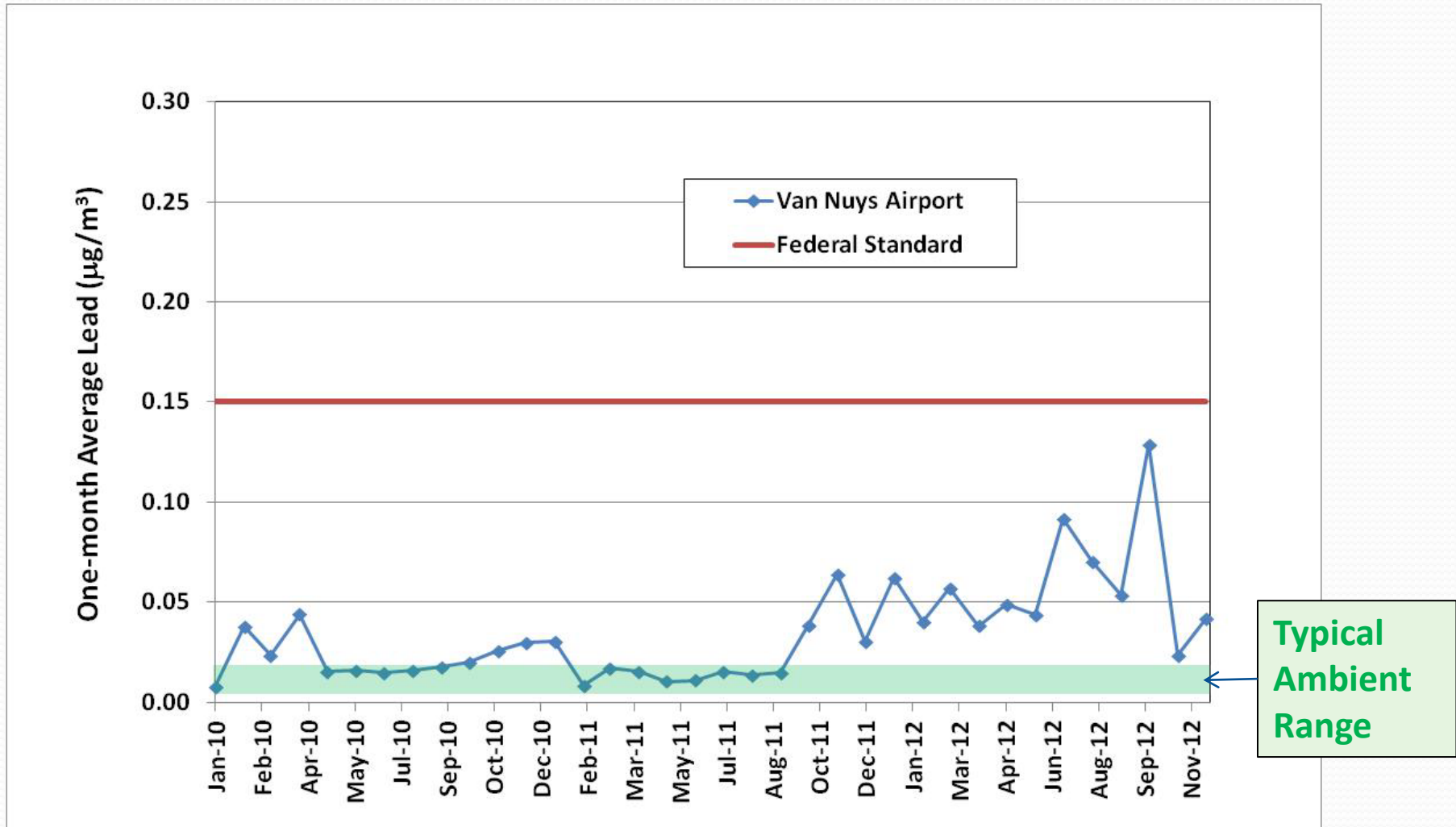
Downtown LA - Average

9.5/13.1

Annual Basin Average

8.6

Van Nuys Airport – Downwind of Runway



Other Notable Aircraft Lead Emissions Studies

- **Santa Monica Airport**
 - U.S. EPA dispersion model development and evaluation project
 - Included limited monitoring for model validation
 - Model predicted exceedances of Federal Standard on-site
- **U.S. EPA Airport Initial Monitoring Assessment**
 - Exceedances of Federal Standard at San Carlos Airport (San Mateo) and McClellan-Palomar Airport (San Diego), very near runways.
- **North Carolina Study**
 - A Geospatial Analysis of the Effects of Aviation Gasoline on Childhood Blood Lead Levels (Miranda et al., EHP, 2011)
 - “Children living within 500 m of an airport at which planes use leaded avgas have higher blood lead levels than other children. This apparent effect ...was evident also among children living within 1,000 m of airports.”
 - “Although the estimated increase was not especially large”

Federal Activities

- In 2006, Friends of the Earth petitioned U.S. EPA to make an endangerment finding for General Aviation lead emissions
- EPA agreed on a path to evaluate the issue
- In 2010, U.S. EPA issued an Advanced Notice of Proposed Rulemaking
 - Described and requested comments on the technical data used for the evaluation
 - Requested comments on approaches for transition to unleaded avgas
- If endangerment is determined, then U.S. EPA, in consultation with FAA, must establish standards for controlling lead emissions from General Aviation

South Coast AQMD Future Activities

- Continue to monitor lead throughout the Basin and near major stationary sources
- Comply with all U.S. EPA monitoring regulations, including any new airport monitoring requirements
- Conduct special studies as needed to assess lead emissions impacts
- Ensure continued compliance with Federal Standards through emissions controls on stationary sources
- Support U.S. EPA actions to work towards removing lead from avgas if feasible.