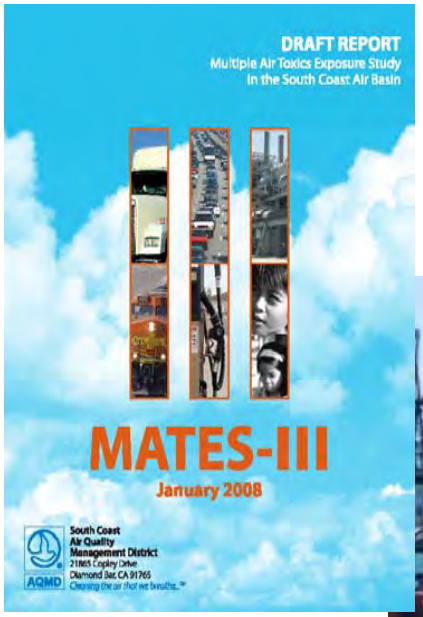
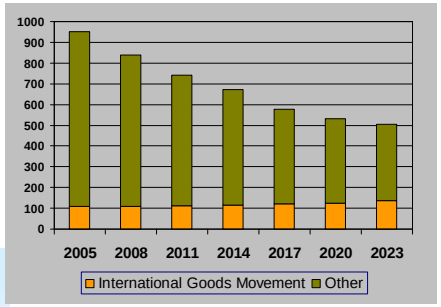
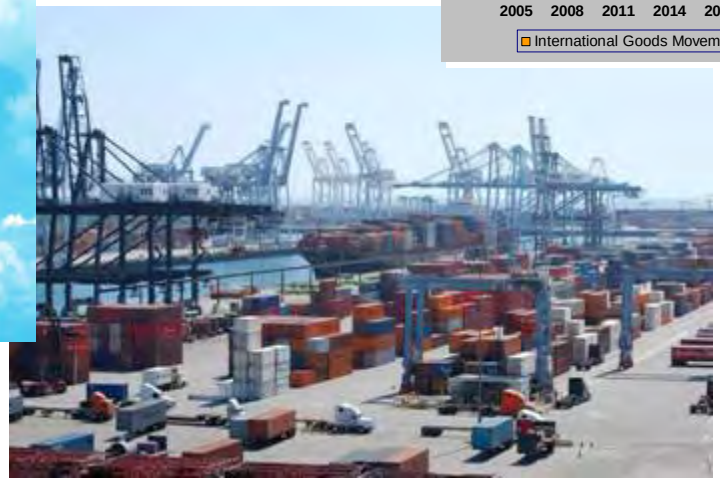
MATES III and Other Indicators of the Air Quality Challenge



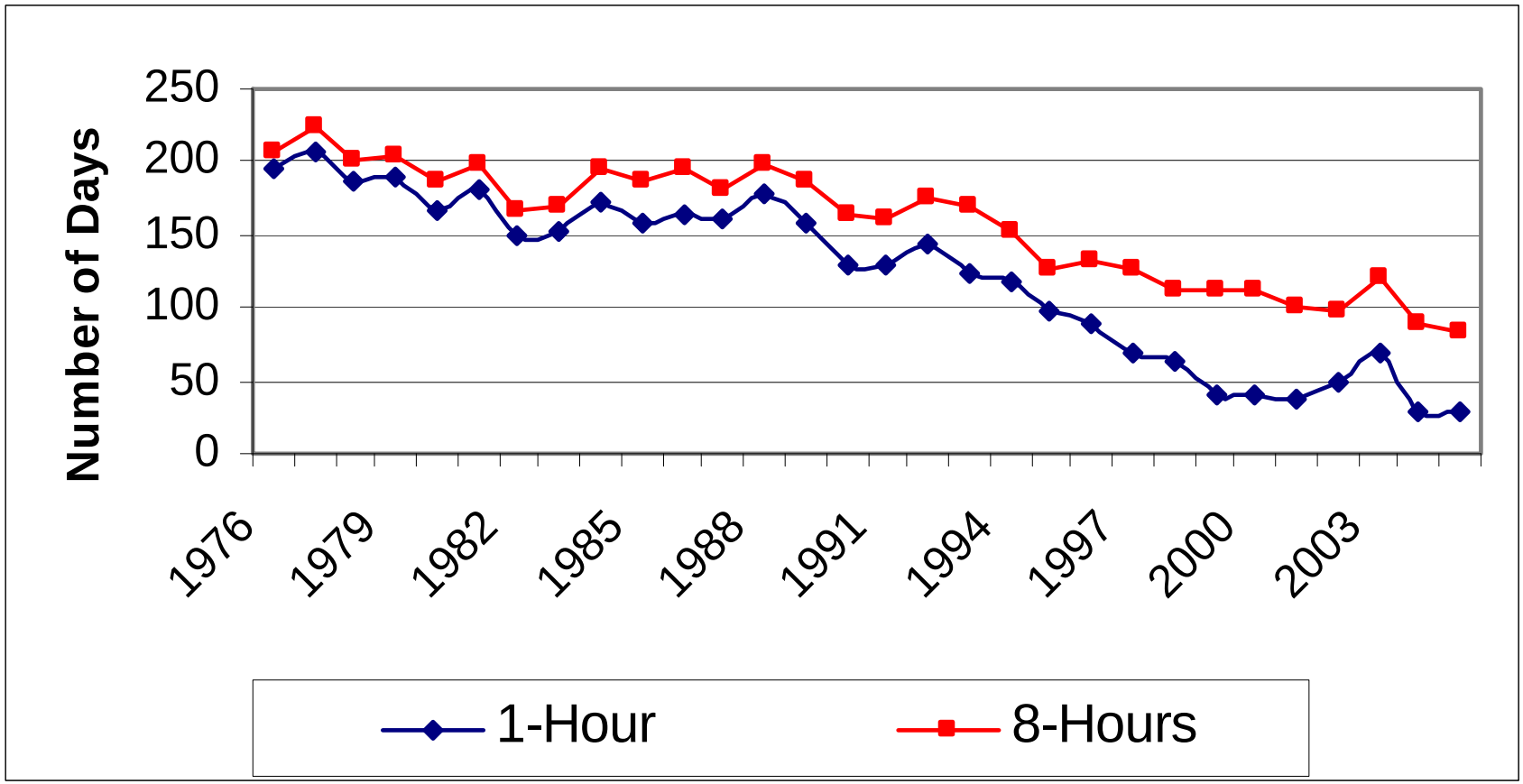




Conference: *Air Quality: Are We Making Progress?*
May 16, 2008
Peter Greenwald
Senior Policy Advisor
South Coast Air Quality Management District

Air Quality Trends

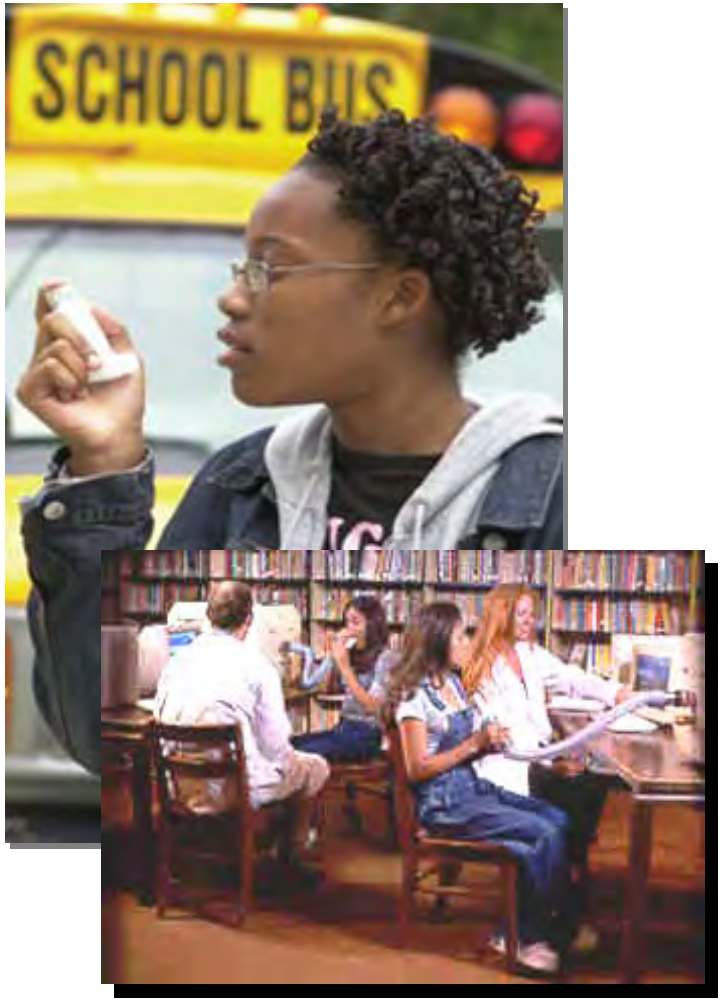
Annual Days Exceeding Ozone Standards



Health Impacts
In South Coast Air Basin
(Annual)

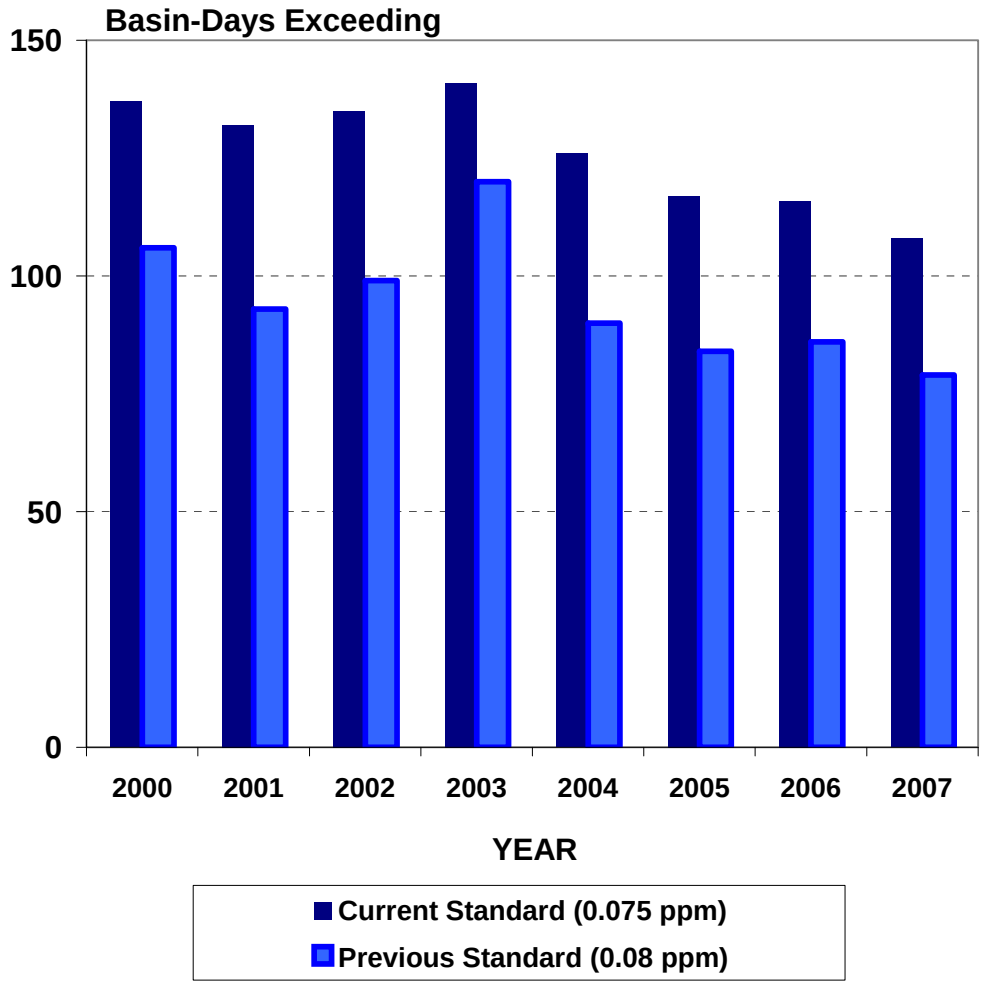
- 5,400 Premature Deaths*
- 980,000 Lost Work Days
- 2,400 Hospitalizations
- 140,000 Asthma & Lower Respiratory Symptoms
- 5,000,000 Minor Restricted Activity Days

- Other Research:
  e.g. Children's Health Study



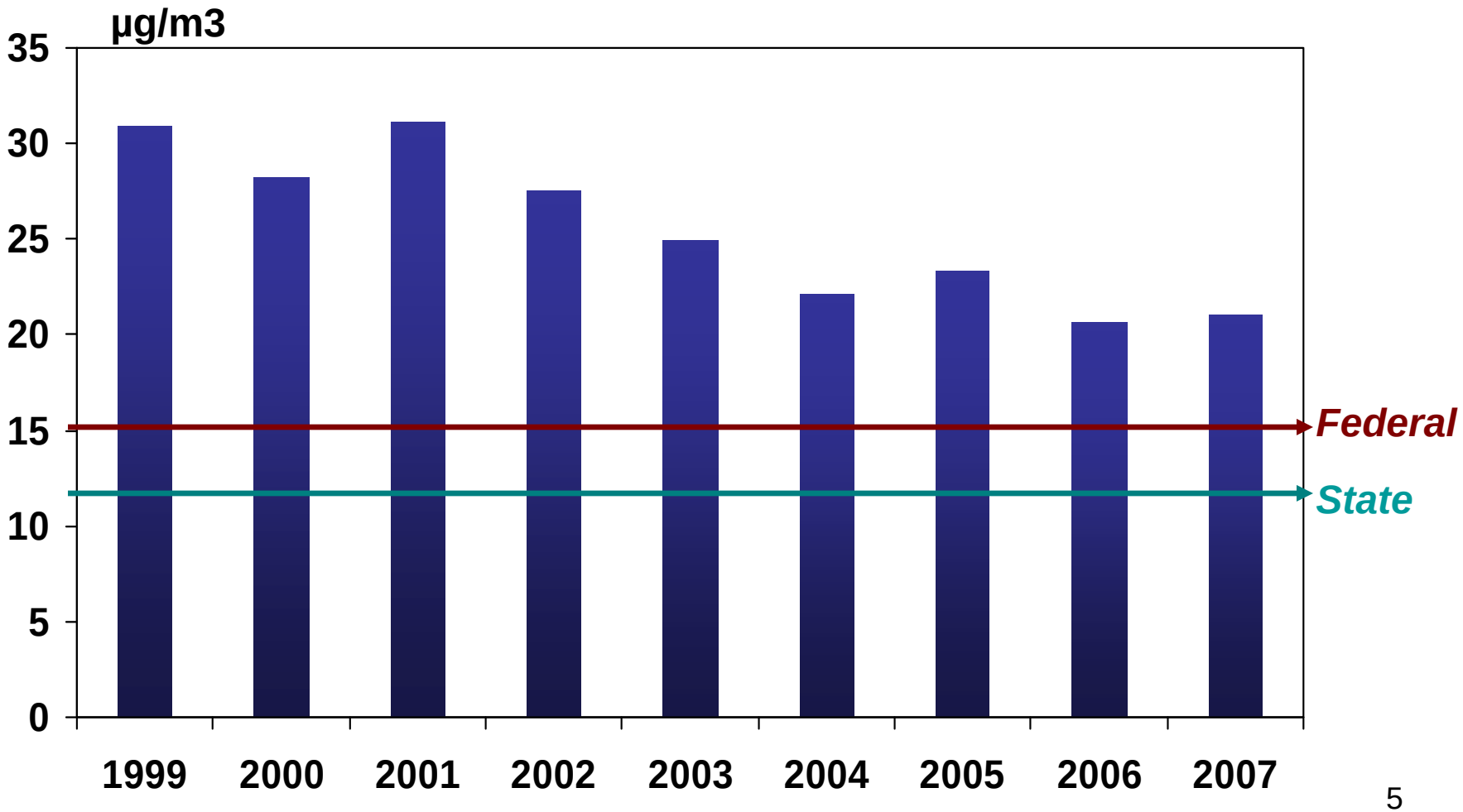
From PM only. Source: California Air Resources Board, 2007; 1999-2000 Air Quality Data

OZONE, 2000-2007
Number of Basin-Days Exceeding the Federal Standard**



** U.S. EPA has revised the federal ozone standard from 0.08 ppm to 0.075 ppm effective May 2008.

PM2.5, 1999-2007
Maximum Annual Average Concentration
(compared to state and federal standards)

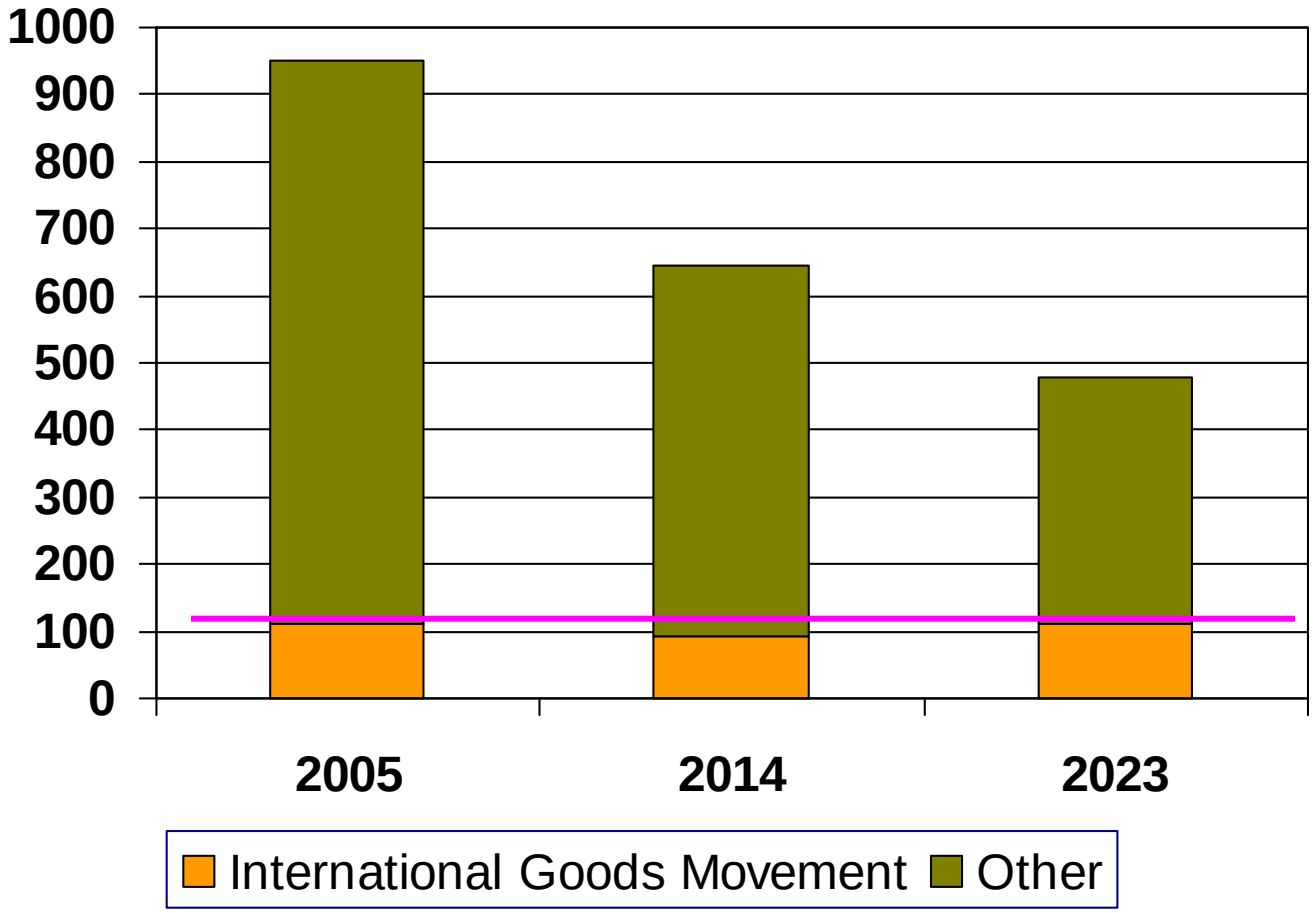


Nitrogen Oxides

Regional Baseline Emissions and Federal 8-Hour Ozone Carrying Capacity

Including benefits of all regulatory agency rules adopted to date

(tons per day)



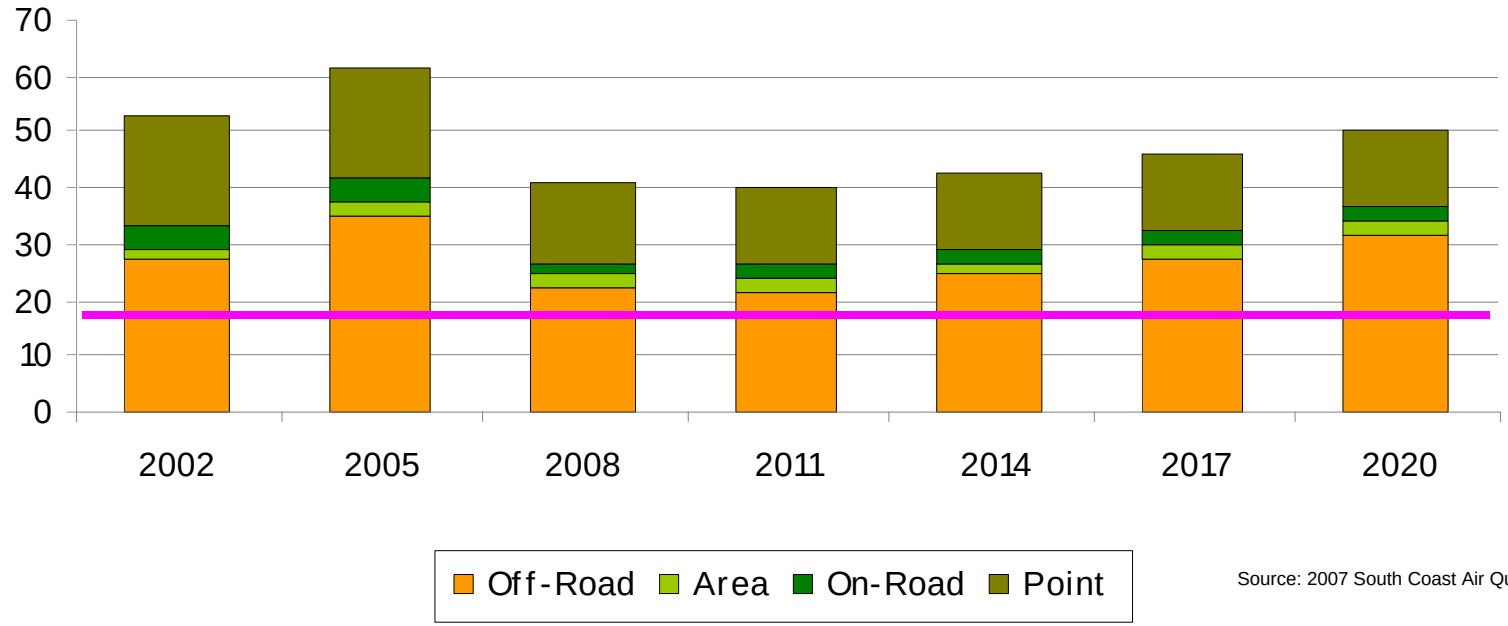
Carrying Capacity - 114 ***2023 Int'l Goods Movement - 111*** ***2023 "Black Box" - 220***

Sulfur Oxides

Regional Baseline Emissions from 2007 Air Quality Management Plan and Federal "Annual" PM 2.5 Standard Carrying Capacity

With benefit of CARB marine auxiliary engine rule invalidated by court

(tons per day)



Source: 2007 South Coast Air Quality Management Plan

Year 2015 PM2.5 Carrying Capacity - 19

Year 2014 Marine Vessels - 22

Diesel Particulates

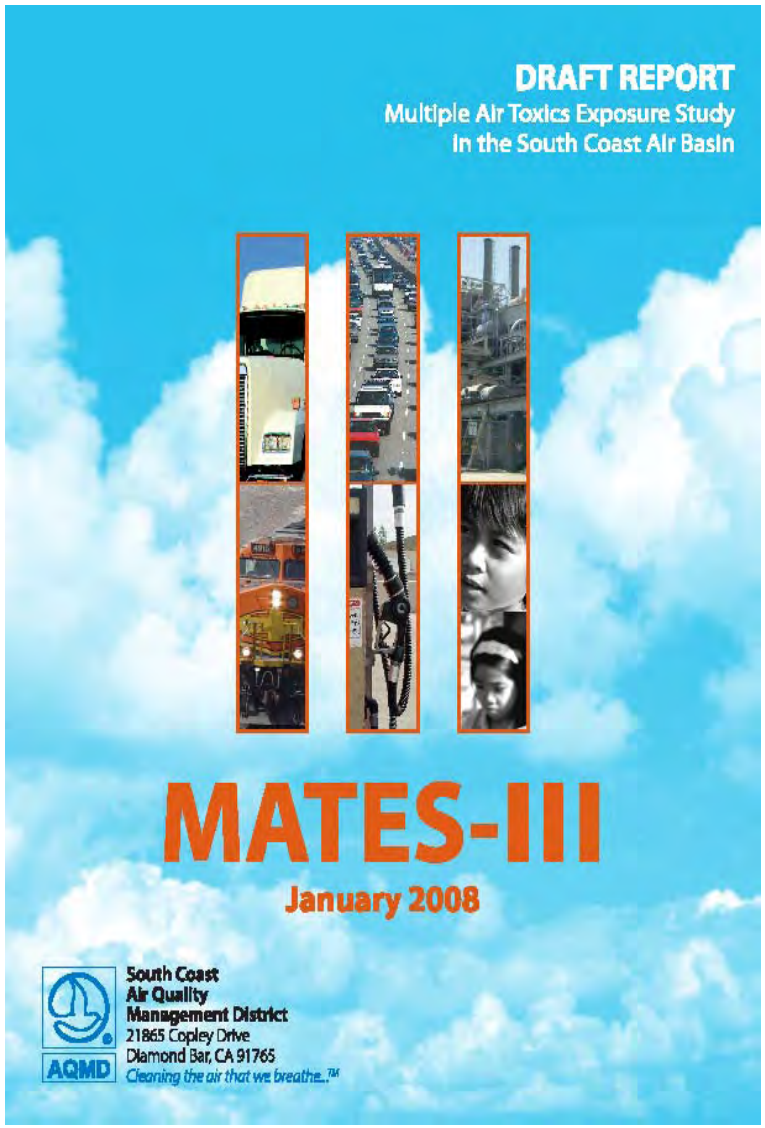
Regional Baseline Emissions

Including benefits of all regulatory agency rules adopted to date

With benefit of CARB marine auxiliary engine rule invalidated by court

(tons per day)

Multiple Air Toxics Exposure Study (MATES III)



Background

- Multiple Air Toxics Exposure Study (MATES I): 1987
- MATES II: 1998-99
- MATES III: 2004-2006

Key Components

- Monitoring
- Emissions inventory
- Modeling

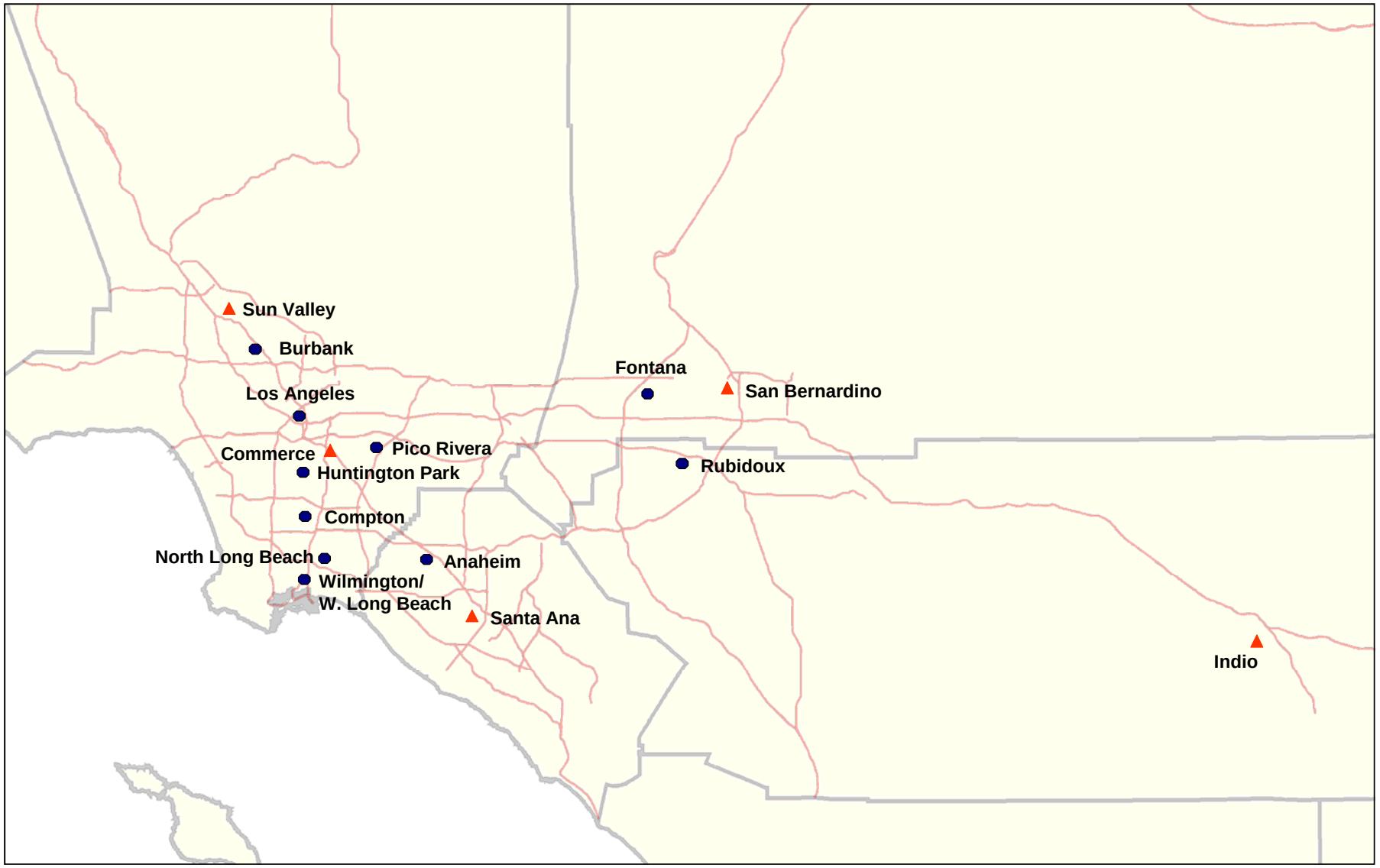
Enhancements to MATES III

- Monitoring every 3 days
- Data collected over 2 years: April ‘04 – March ‘06
- Added $PM_{2.5}$ samples
- Added naphthalene, PAHs, PM organic tracers
- Chemical Mass Balance (CMB) to estimate $PM_{2.5}$ source apportionment
- Latest 2007 AQMP inventory used
- Improved spatial allocation of truck emissions
- Updated modeling platform consistent with AQMP

Substances Measured

Benzene	1,3-Butadiene	Carbon Tetrachloride
Chloroform	Chloromethane	Dichlorobenzene
Methylene Chloride	Perchloroethylene	Dichloroethane
Ethylbenzene	Toluene	Trichloroethylene
Xylene	Styrene	Vinyl Chloride
Acetaldehyde	Formaldehyde	Acetone
Arsenic	Beryllium	Cadmium
Chromium^{+6}	Copper	Lead
Manganese	Nickel	Zinc
Elemental Carbon	Naphthalene	PAHs
Diesel PM	PM_{10}	$PM_{2.5}$

MATES III Monitoring Sites

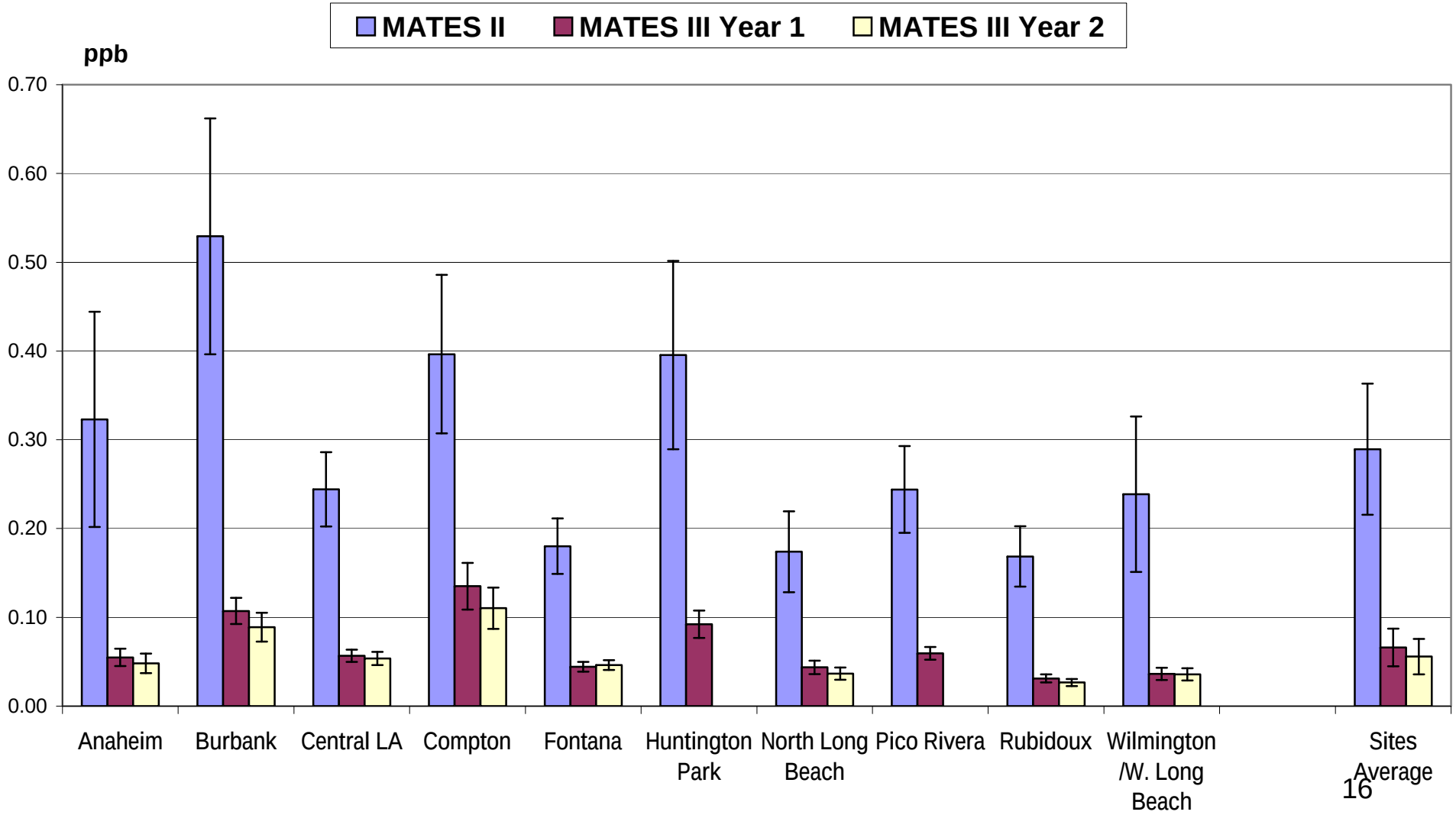


Statistics

- ~18,000 samples collected
- ~37,000 analyses performed
- ~911,000 data points produced

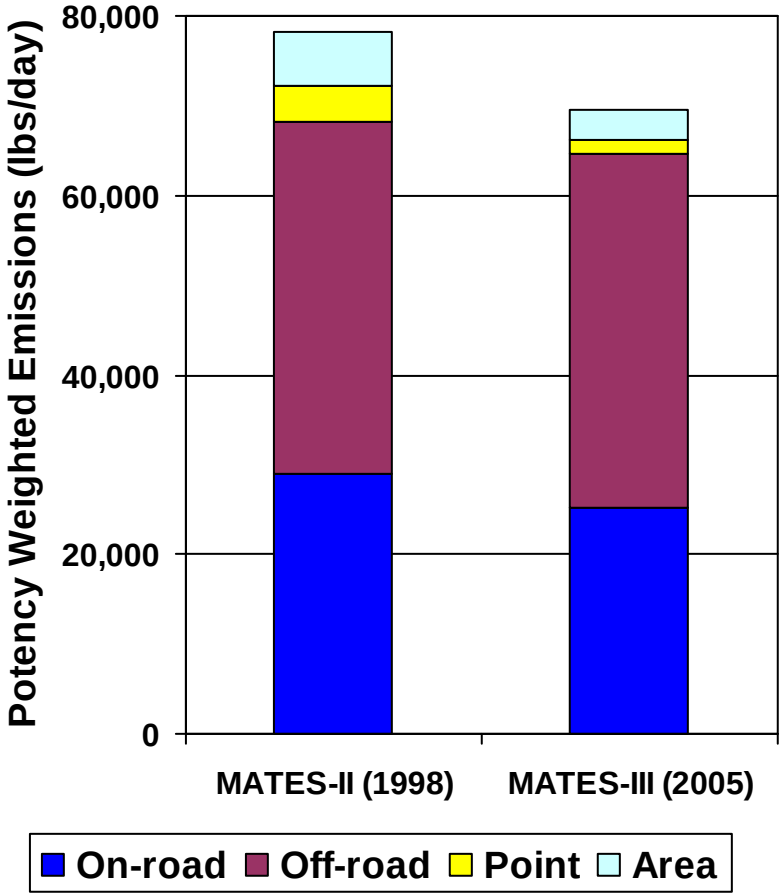
Example of Monitoring Data

Perchloroethylene



Regionwide Potency-Weighted Emissions Inventory

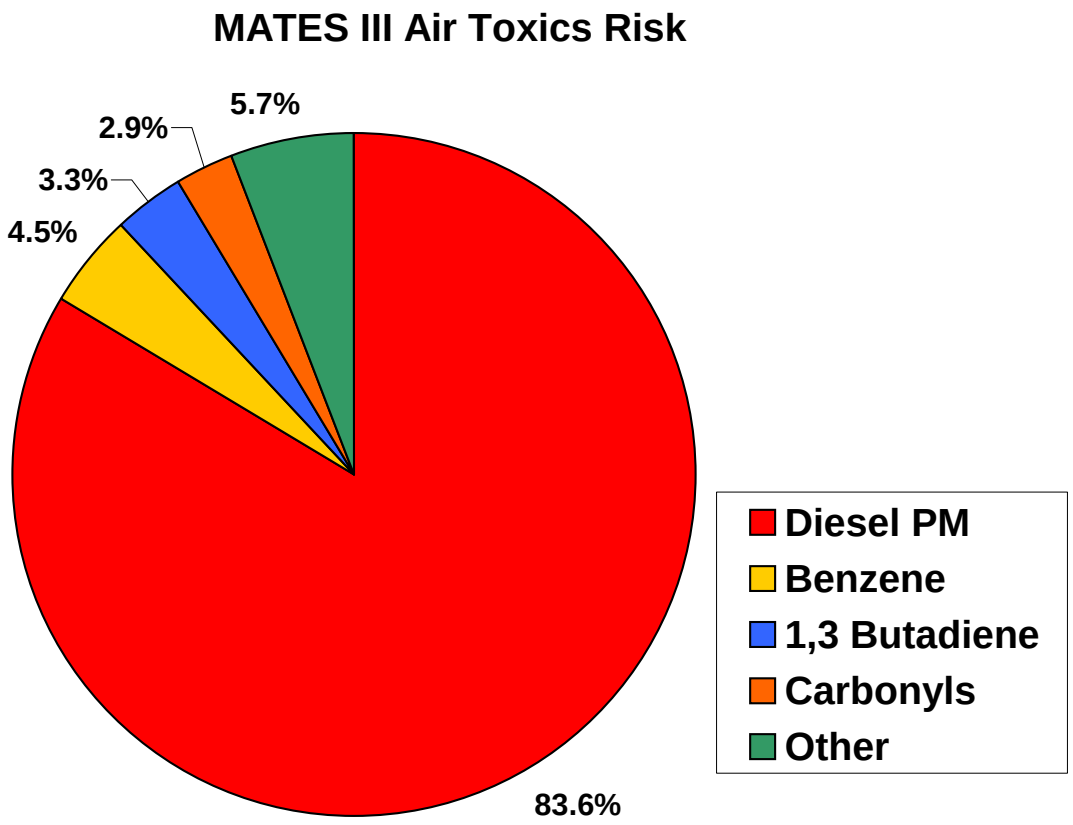
(MATES-II vs. MATES-III)



Source Category	Percent Change
On-road	13% decrease
Off-road	1% increase
Point	65% decrease
Area	43% decrease

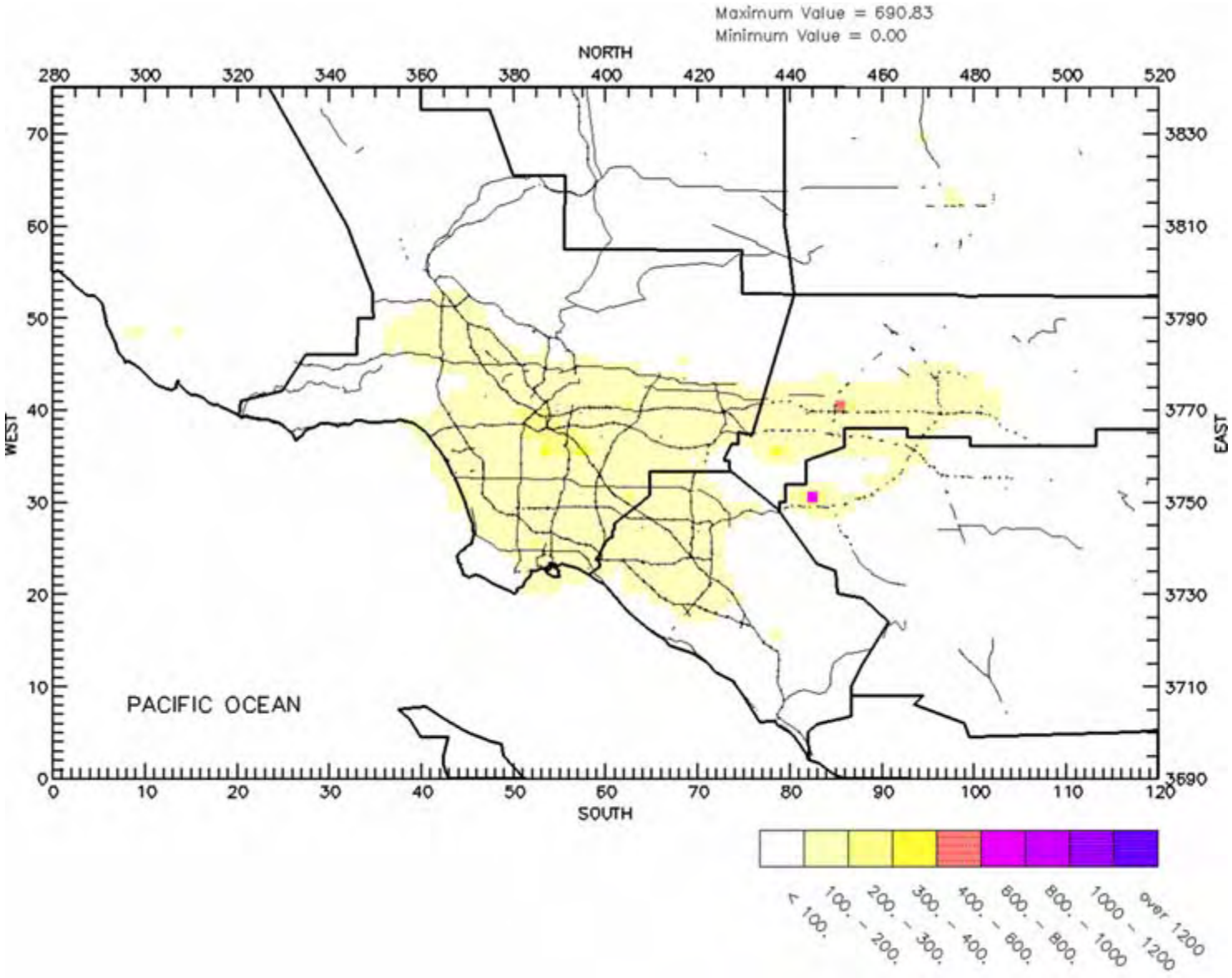
MATES III Risk Contribution

(From Monitor Data)

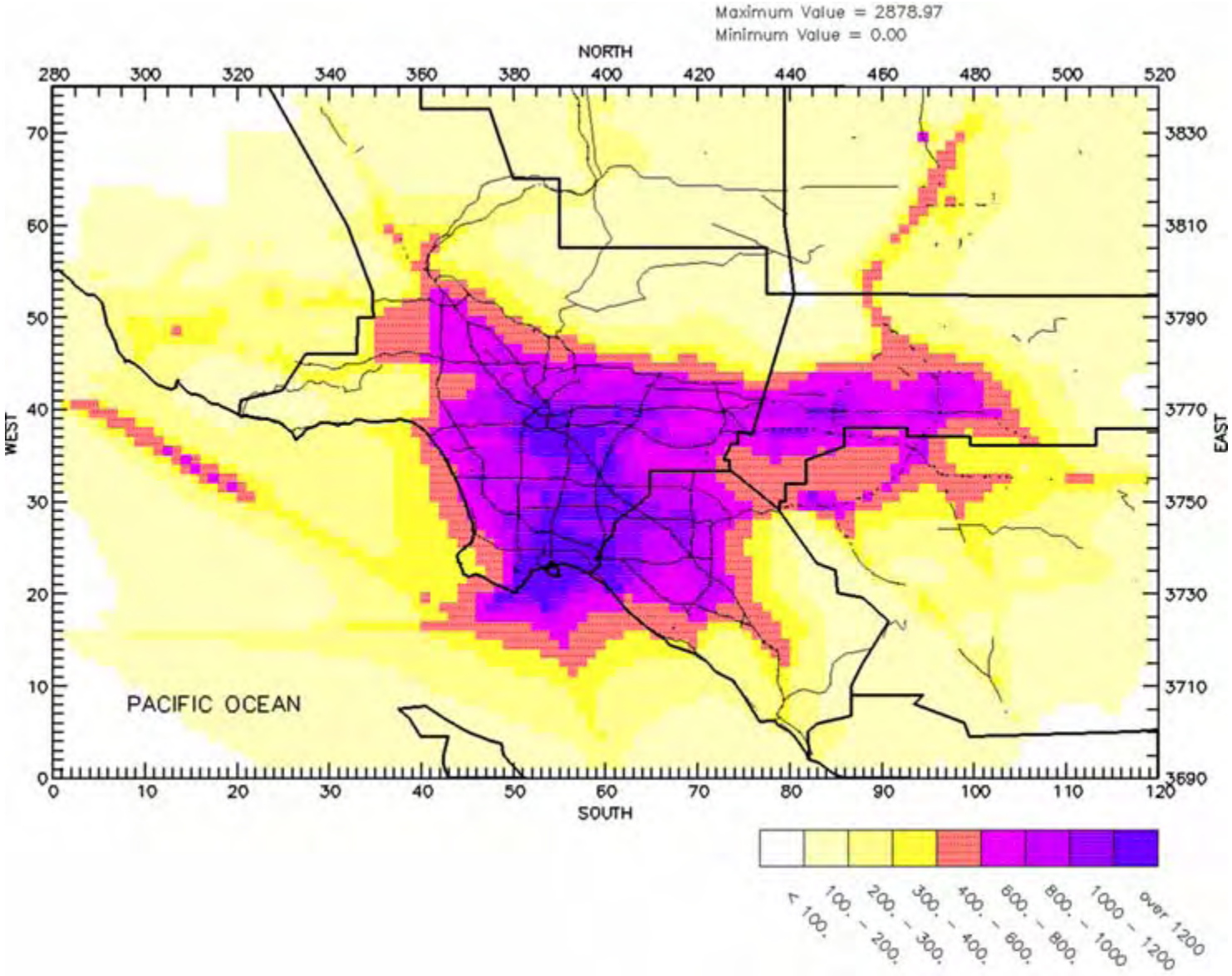


Basinwide Risk: 1194 per million
Based on Average at Fixed Monitoring sites

MATES-III Modeled Risk Without Diesel



MATES-III Modeled Risk From All Sources



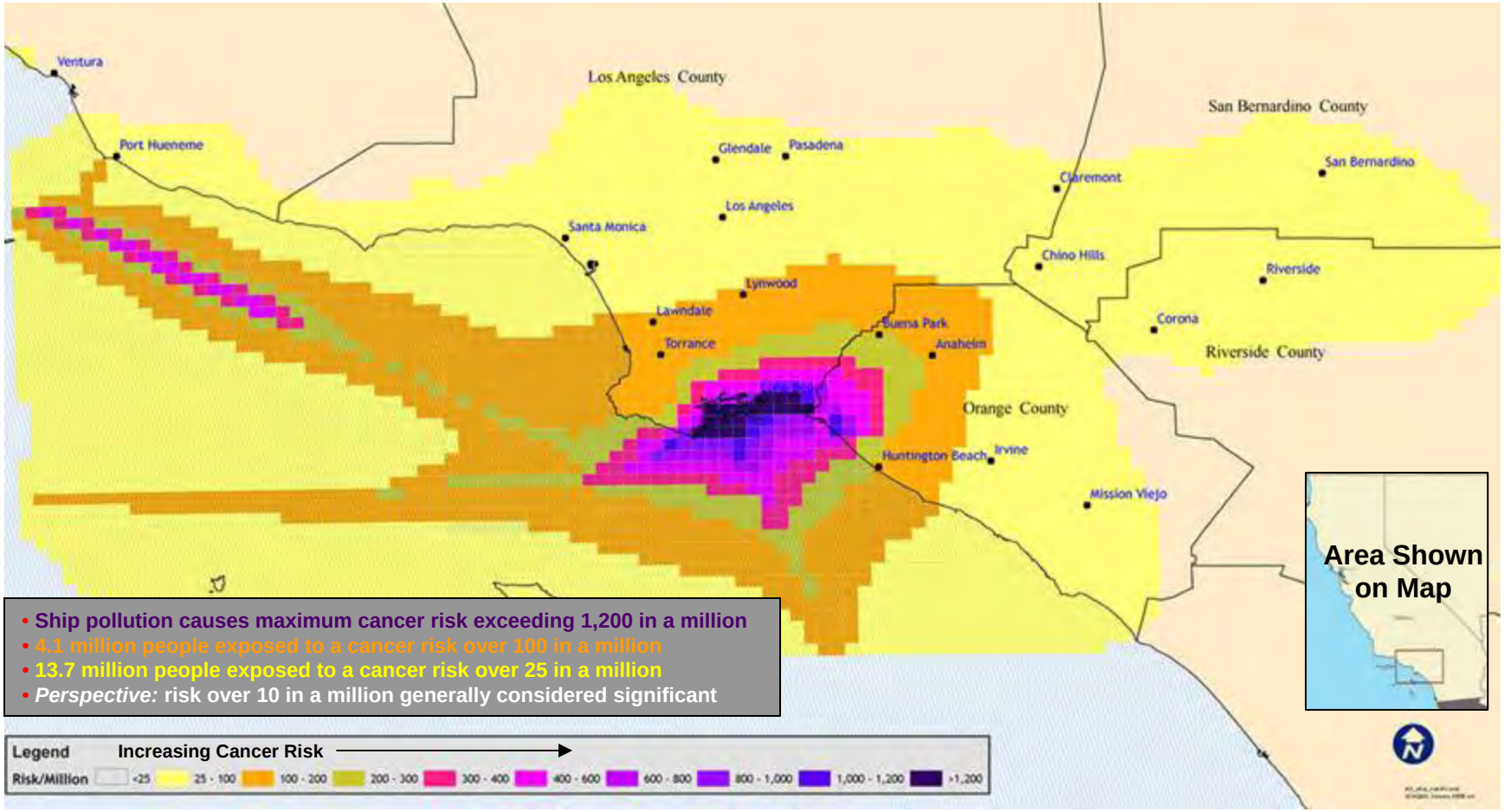
Perspective:
SCAQMD Rule Risk Limits for Stationary Sources

- Existing Sources: 25 in a million
- New Sources: 1 to 10 in a million

Region-Wide Modeled Risk Comparison

- Region-wide population-weighted risk:
  - 810 in a million
  - 17% below MATES II
    - Variables between MATES II & III:
      - Emission inventory updates
      - Meteorology
      - Modeling methodology
    - District continuing to analyze to better define trend

Cancer Risk From Oceangoing Vessel Emissions



Source: SCAQMD MATES III Study (2008)

MATES: Next Steps

- Draft report and technical appendices available on AQMD web site
- 90 day public review closed April 4, 2008
- Technical Advisory Group review
- Final report

Thank You