

UNIVERSIDAD TECNOLÓGICA METROPOLITANA
Facultad de Ciencias de la Construcción y Ordenamiento Territorial

Programa de Extensión y Vinculación Externa

**“El Problema de la Polución del Aire
en Los Ángeles, California”
Sr. Antonio Thomas C.**



DEPARTAMENTO DE
PREVENCIÓN DE RIESGOS
Y MEDIO AMBIENTE

Santiago, Noviembre 2010





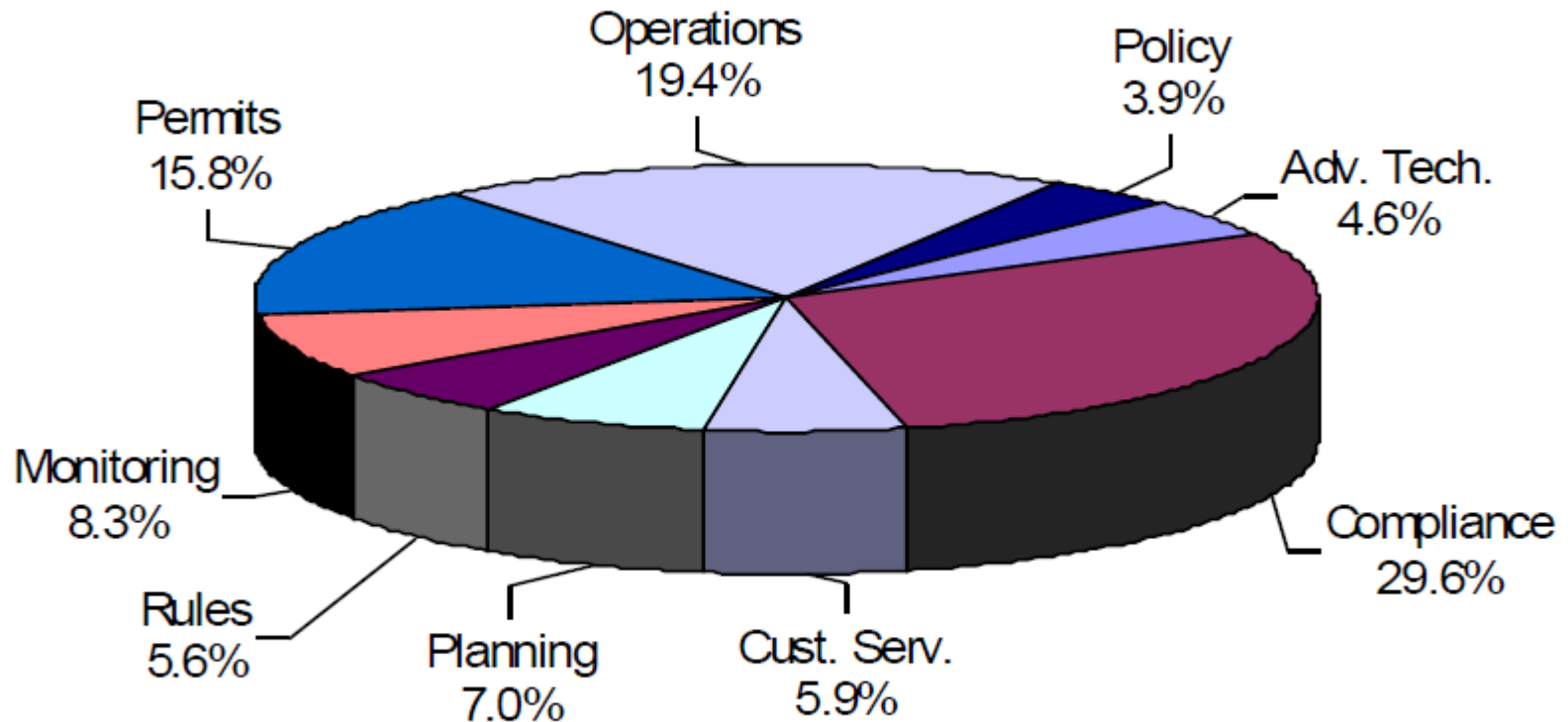
AQMD

South Coast Air Quality Management District

Clean Air is Every Body's Business

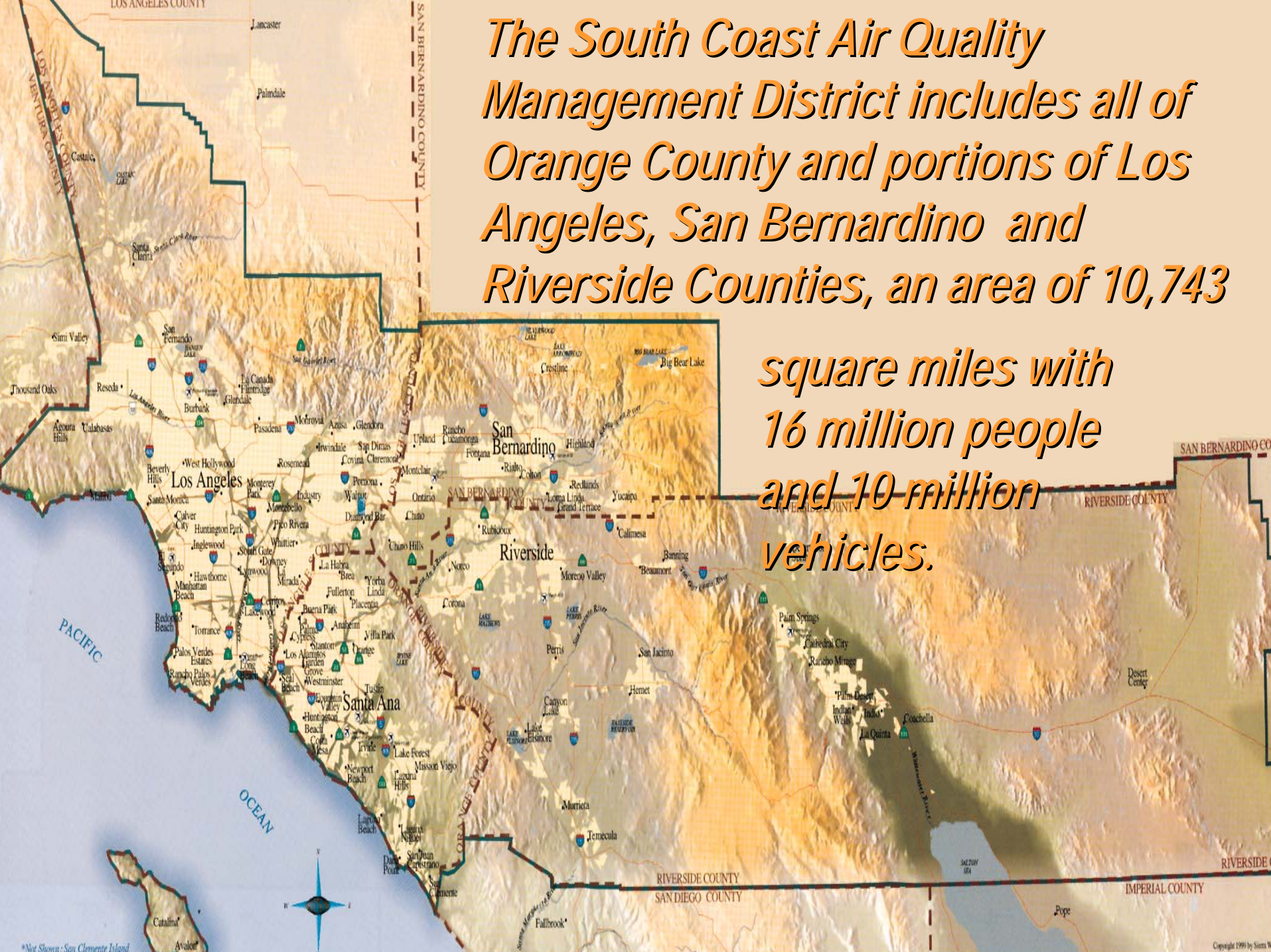
South Coast Air Quality Management District Budget (\$130 Millions/Year)

Program Category Expenditures



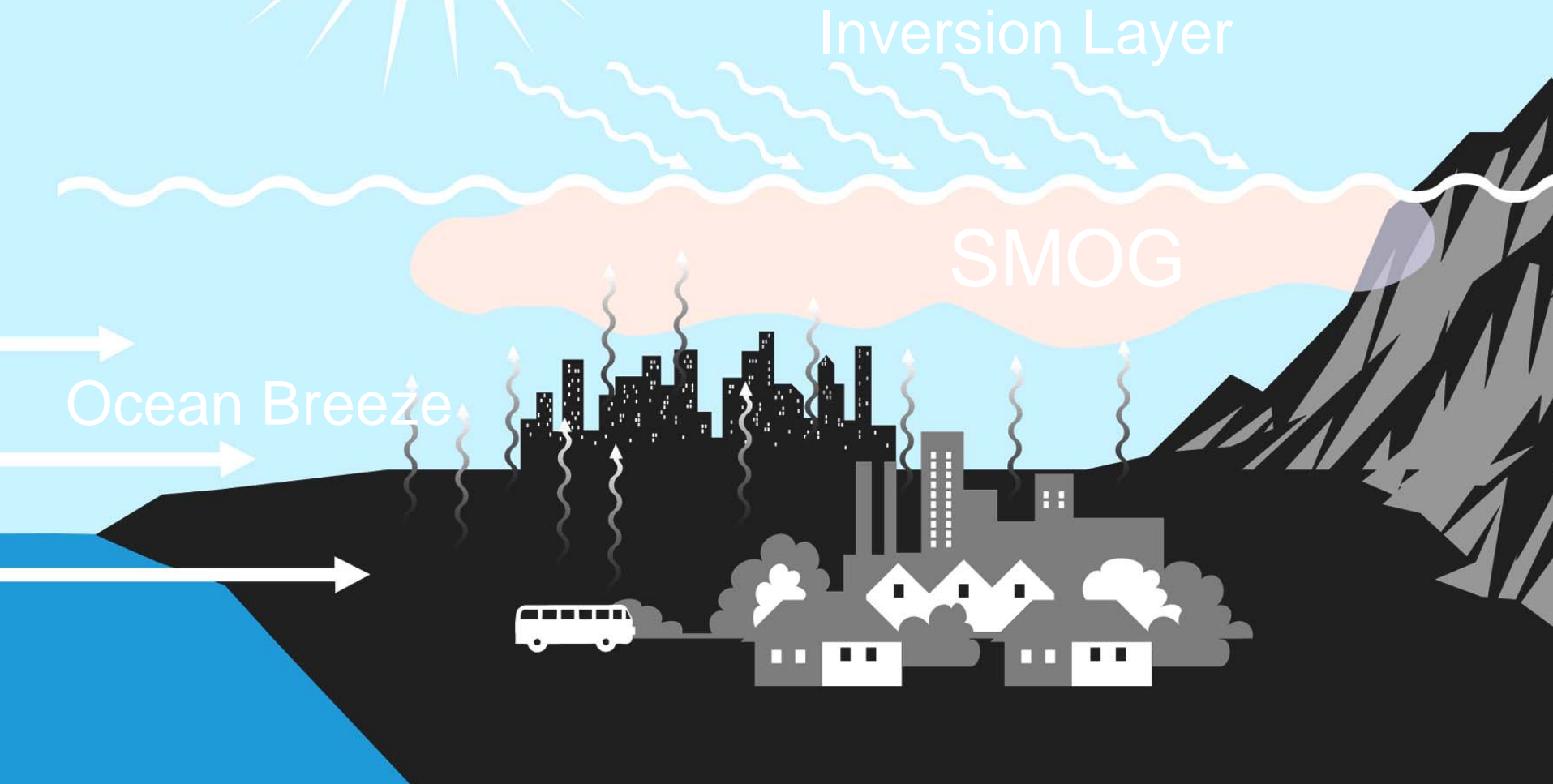
The South Coast Air Quality Management District includes all of Orange County and portions of Los Angeles, San Bernardino and Riverside Counties, an area of 10,743

square miles with 16 million people and 10 million vehicles.



*Not Shown: San Clemente Island

How Smog Is Formed



Inversion Layer

Atmospheric inversion layers, formed when warm air from the desert flows over cool air from the ocean, trap smog close to the surface.



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Inversion Layer - Downtown Los Angeles



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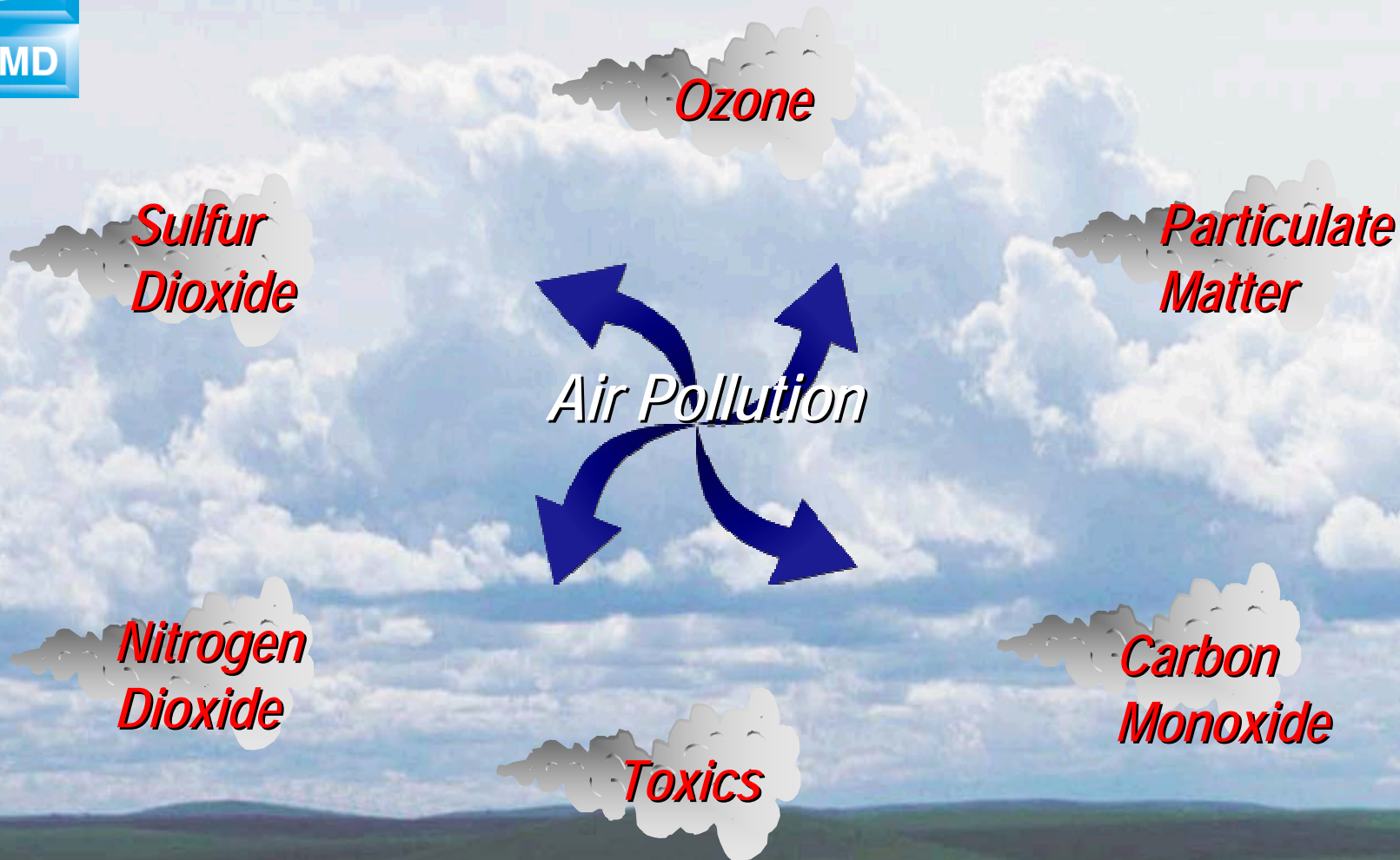




AQMD Air Monitoring



Key Air Pollutants



Ozone

*Sulfur
Dioxide*

*Particulate
Matter*

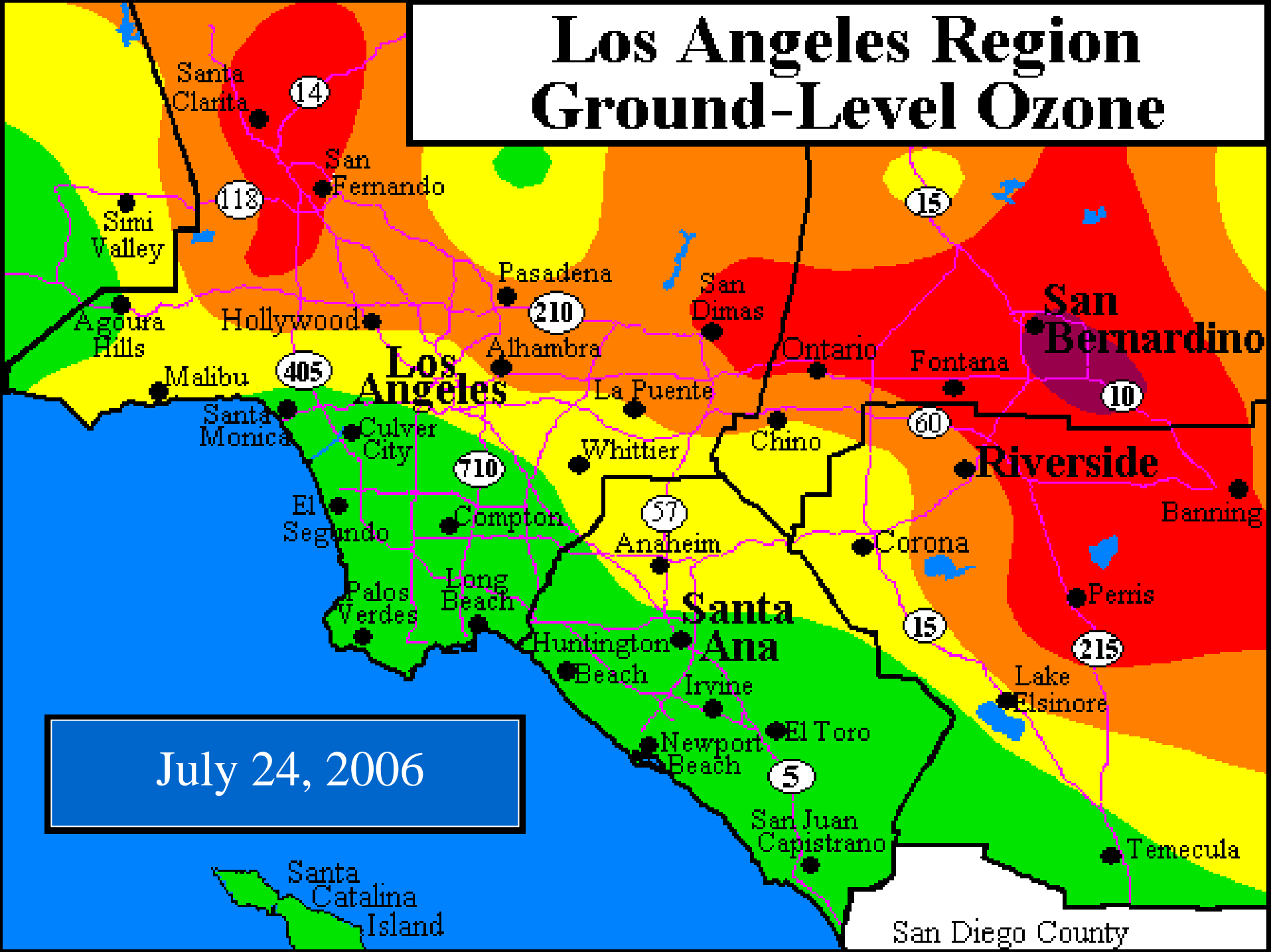
Air Pollution

*Nitrogen
Dioxide*

*Carbon
Monoxide*

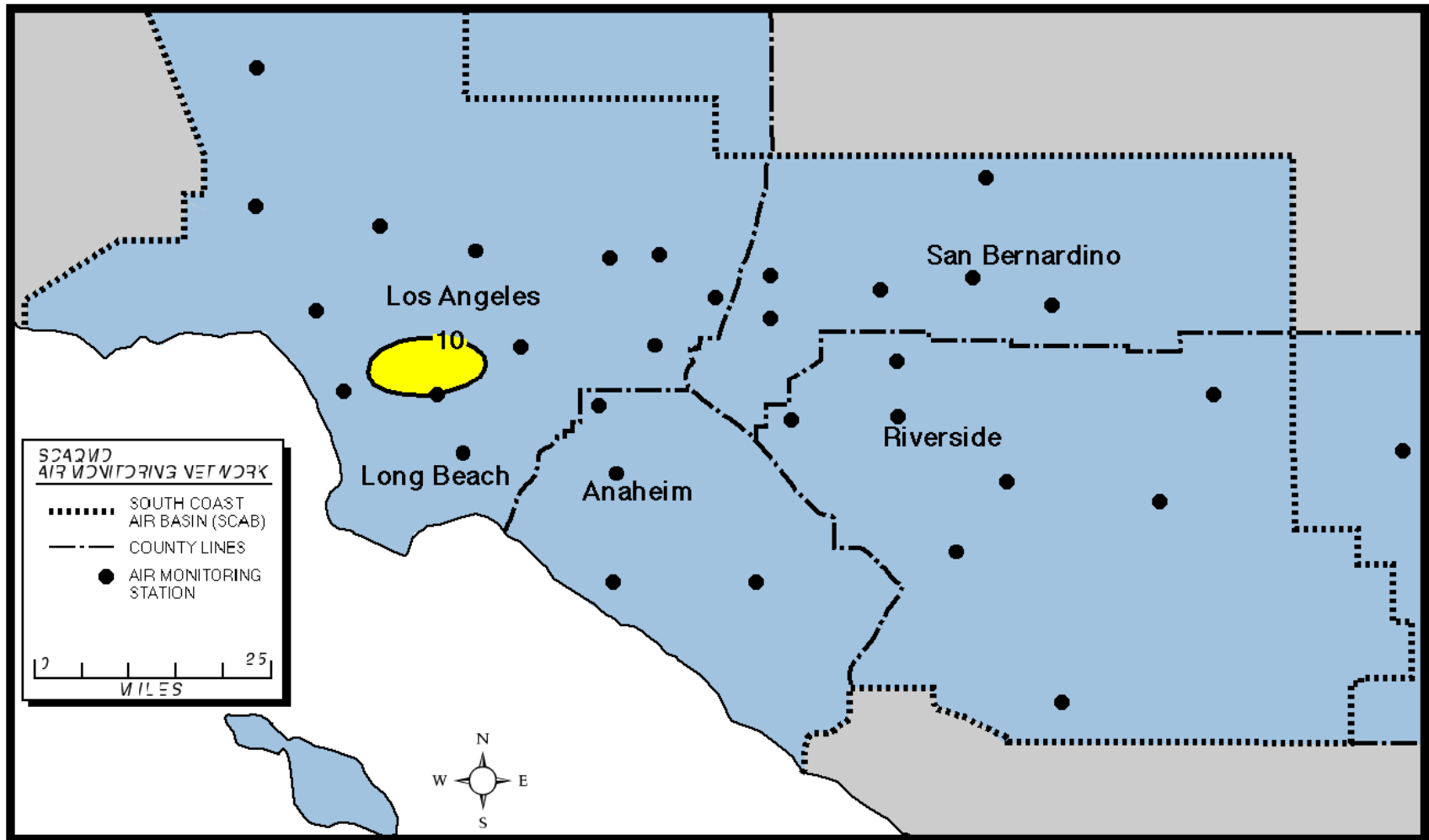
Toxics

Los Angeles Region Ground-Level Ozone



CARBON MONOXIDE - 1998

Number of Days Exceeding Federal Standard
(8-Hour Average CO > 9.5 ppm)



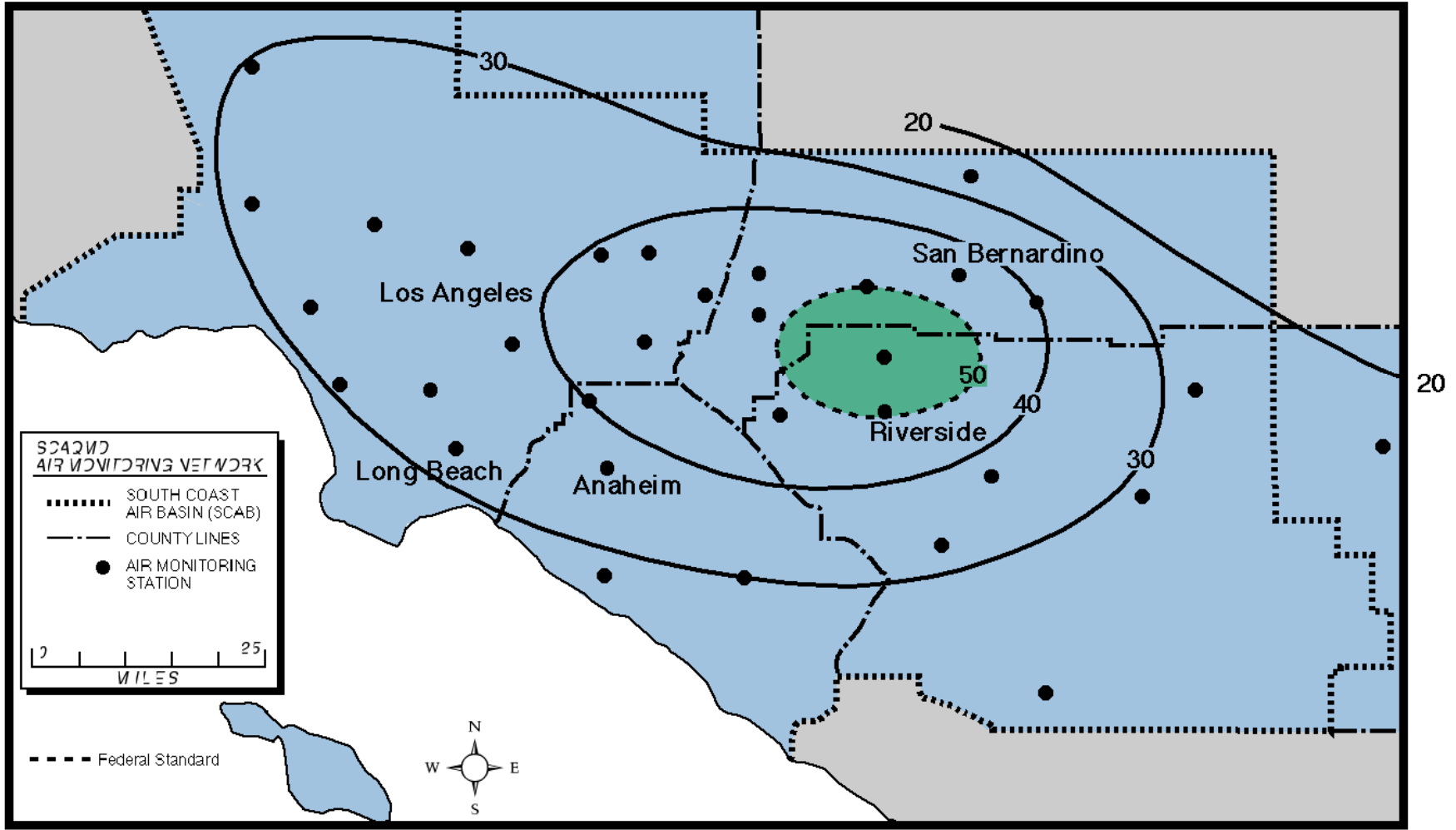
NOT EXCEEDED

0-5

over 5 days

PM10 – 1998

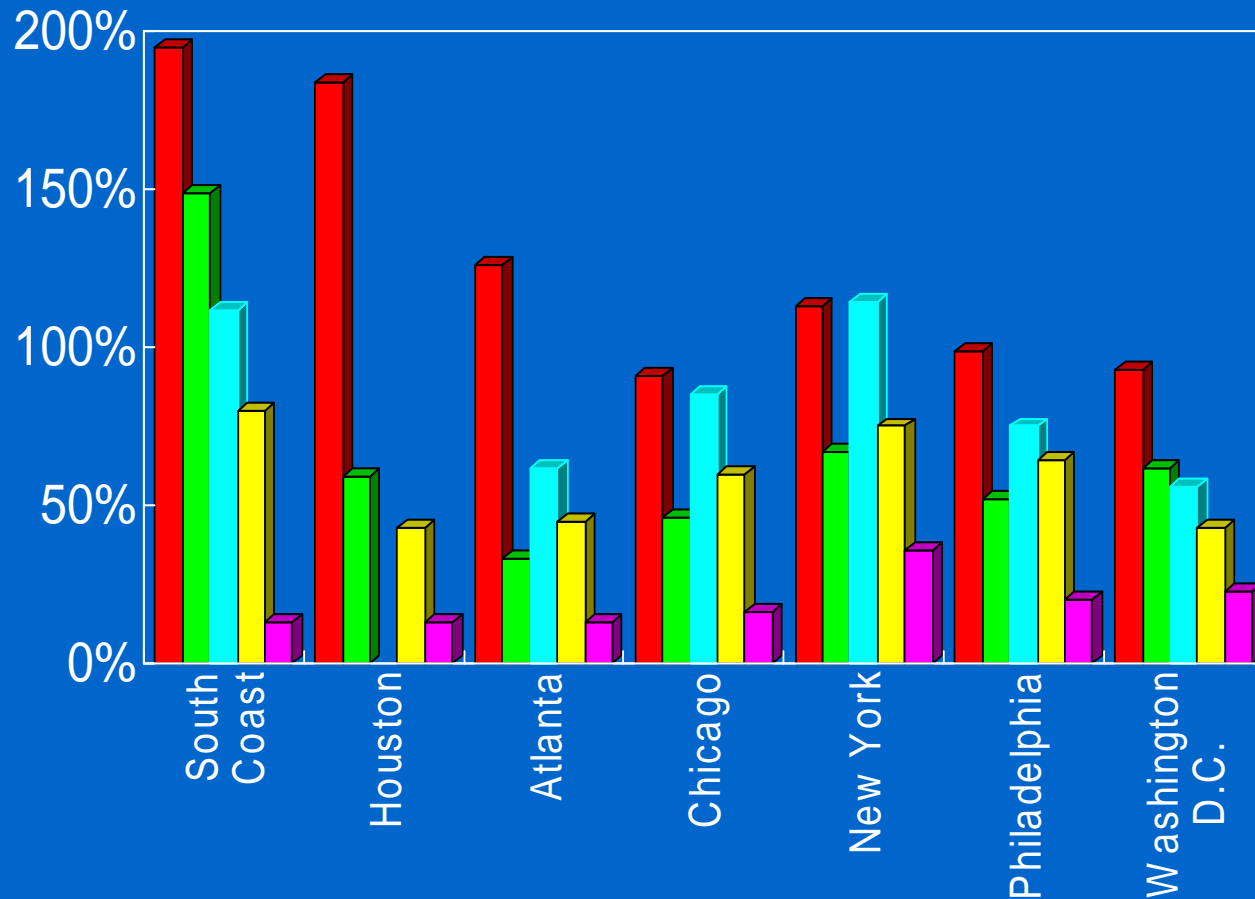
Annual Arithmetic Mean, $\mu\text{g}/\text{m}^3$
(Federal Standard = $50 \mu\text{g}/\text{m}^3$)



NOT EXCEEDED

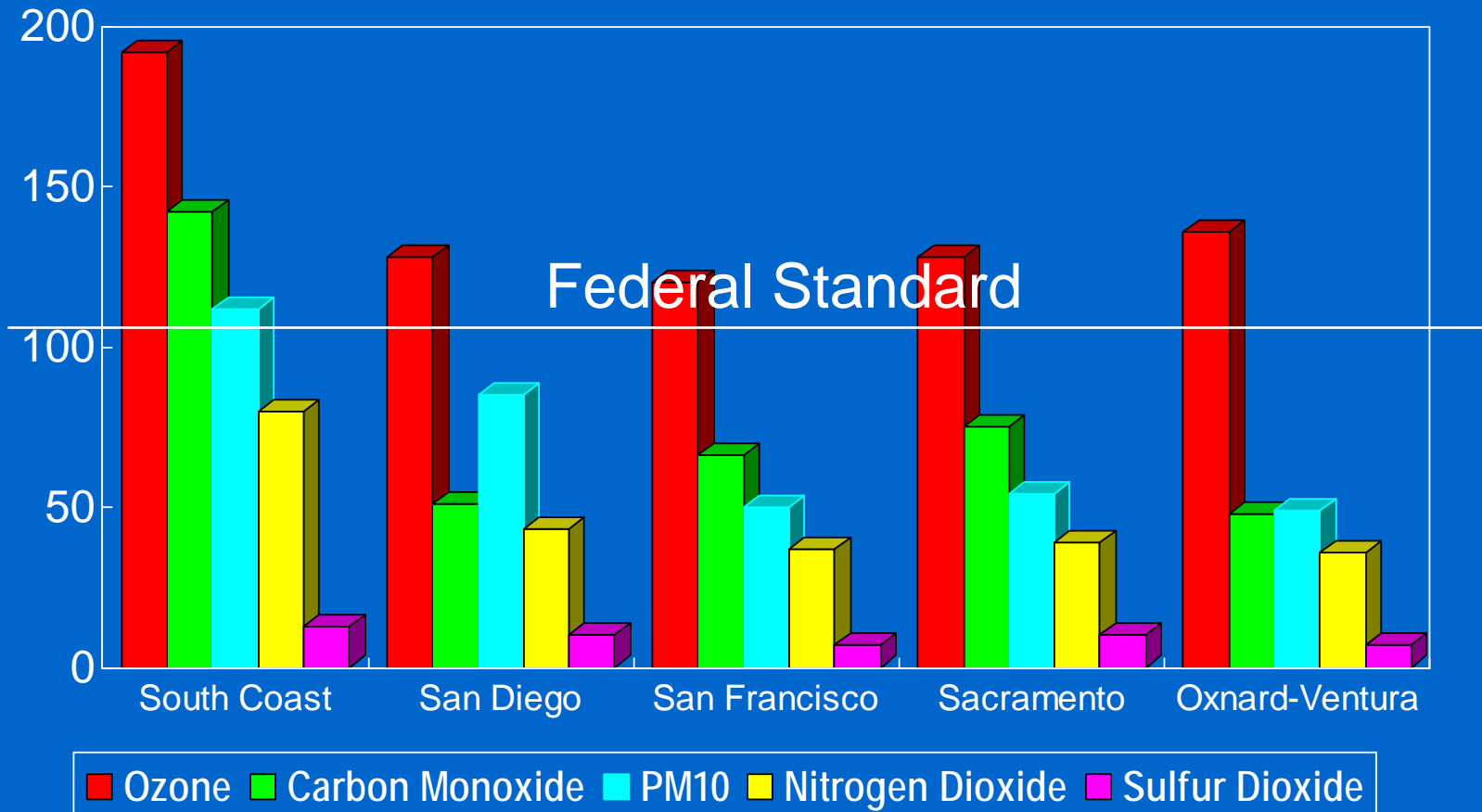
over $50 \mu\text{g}/\text{m}^3$

South Coast Air Basin Air Quality Compared to Other U.S. Cities

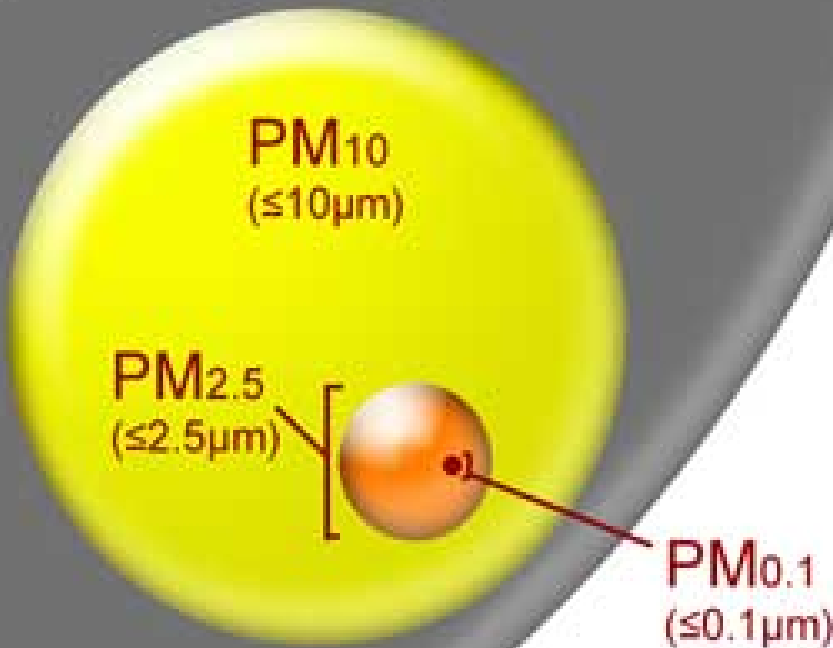


South Coast Air Basin Air Quality Compared to Other California Cities

% Standard



Diameter of human hair
(for scale) : 60 μm

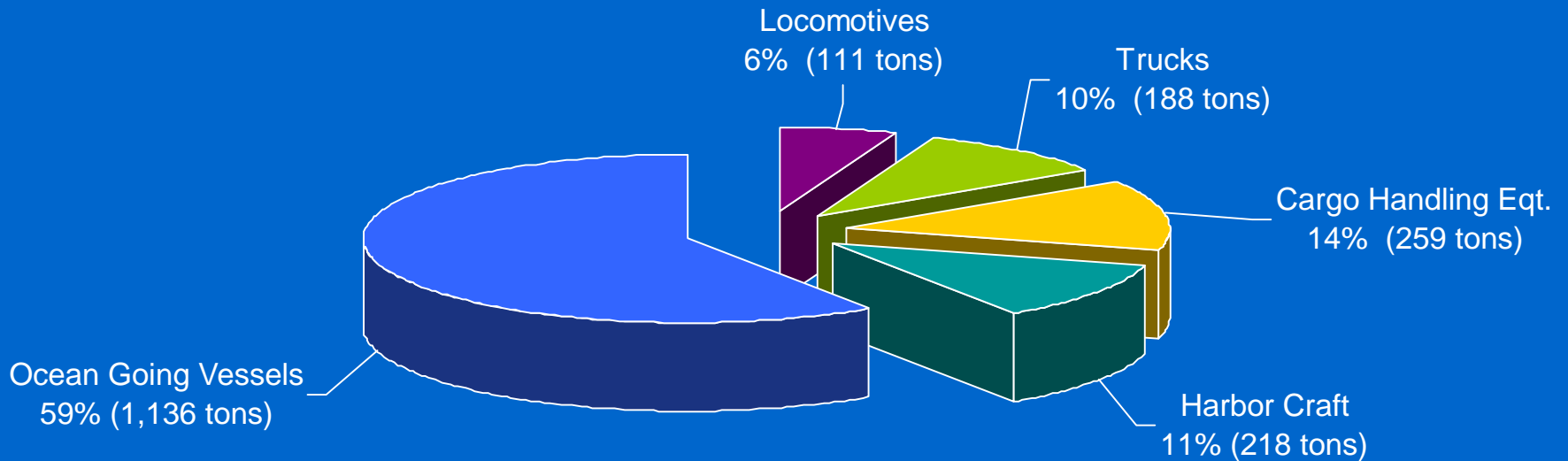


Coarse: 2.5–10 μm
Fine: $\leq 2.5\mu\text{m}$
Ultrafine: $\leq 0.1\mu\text{m}$

Ultra-fine Particle Counts in Southern California Per Cubic Centimeter

Area	Particle Count
Coastal area	600-2,000
Office Spaces	500-2,000
Urban air	10,000 - 40,000
Freeways	40,000 - > 1,000,000

Diesel Particulate Matter Emissions



1,912 tpy = 5.2 tpd

Health Consequences

- >5,000 premature deaths / year
- 9,000 hospitalizations / year
- 1.7 million cases respiratory illness / year
- 1.3 million school absences
- 2.8 million lost workdays / year

Los Angeles Times

Friday, January 26, 2007

FREEWAY AIR DAMAGES YOUNG LUNGS

Children living nearby show signs of lifelong harm, USC study finds.

By THOMAS H. MAUGH II
Times Staff Writer

In the largest and longest study of its kind, USC researchers have found that children living near busy highways have significant impairments in the development of their lungs that

...from Page A1] ...the small airways of the ...s normally associated ...ine particulate matter ...automobiles. ...ells me that I wouldn't ...raising my children ...ificant source of fine- ...dr pollution," said ...C. Arden Pope III of ...'young University, an ...air pollution and ...was not involved in ...myself, would want ...areas where the ex- ...er." ...rch is part of an on- ...of the effects of air

Tainted freeway air harms children's lungs, study says

This latest study of freeway proximity and lung capacity was funded by the California Air Resources Board; the National Institute of Environmental Health Sciences; the Environmental Protection Agency; the National Heart, Lung and Blood Institute; and the Hastings Foundation. Gauderman and his colleagues recruited groups of fourth-grade students, average age 10, in 1993 and 1996. Their schools were scattered from Atascadero in San Luis Obispo County to Alpine in San Diego County.

...essing how much air could be expelled in one breath and how quickly it could be expelled. ...These cohorts of children "are truly an important resource because the study has been going on so long," said epidemiologist Jonathan Samet of Johns Hopkins University's Bloomberg School of Public Health, who also did not take part in the study. The size and scope of the study make it very difficult to replicate, he said. ...Results from the study reported in 2004 indicated that children in the communities with the highest average levels of pol-

abc NEWS

February 7, 2007 | Local News and W

GOOD MORNING AMERICA

All Sections

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Study: Pollution Leaves Women at Greater Risk for Heart Disease, Death

Findings Consistent, Regardless of Weight, Smoking History or Cholest

RELATED STORIES

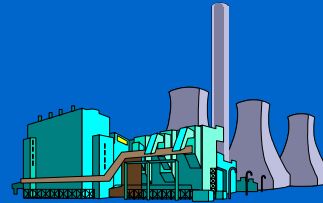
- **VIDEO** ▶ Air Pollution Hurts Womens' Hearts
- U.S. Cities With the Most Air Pollution

abc NEWS

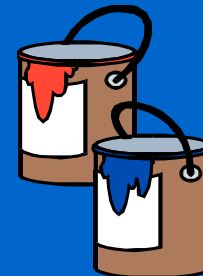
Feb. 1, 2007 — The most rigorous study link pollution and heart disease has found that women who live in areas with higher levels of r

EMISSION SOURCES

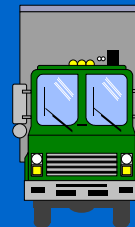
- STATIONARY
 - Industrial Sites



- AREA
 - Smaller dispersed Sources



- MOBILE
 - On-Road
 - Off Road

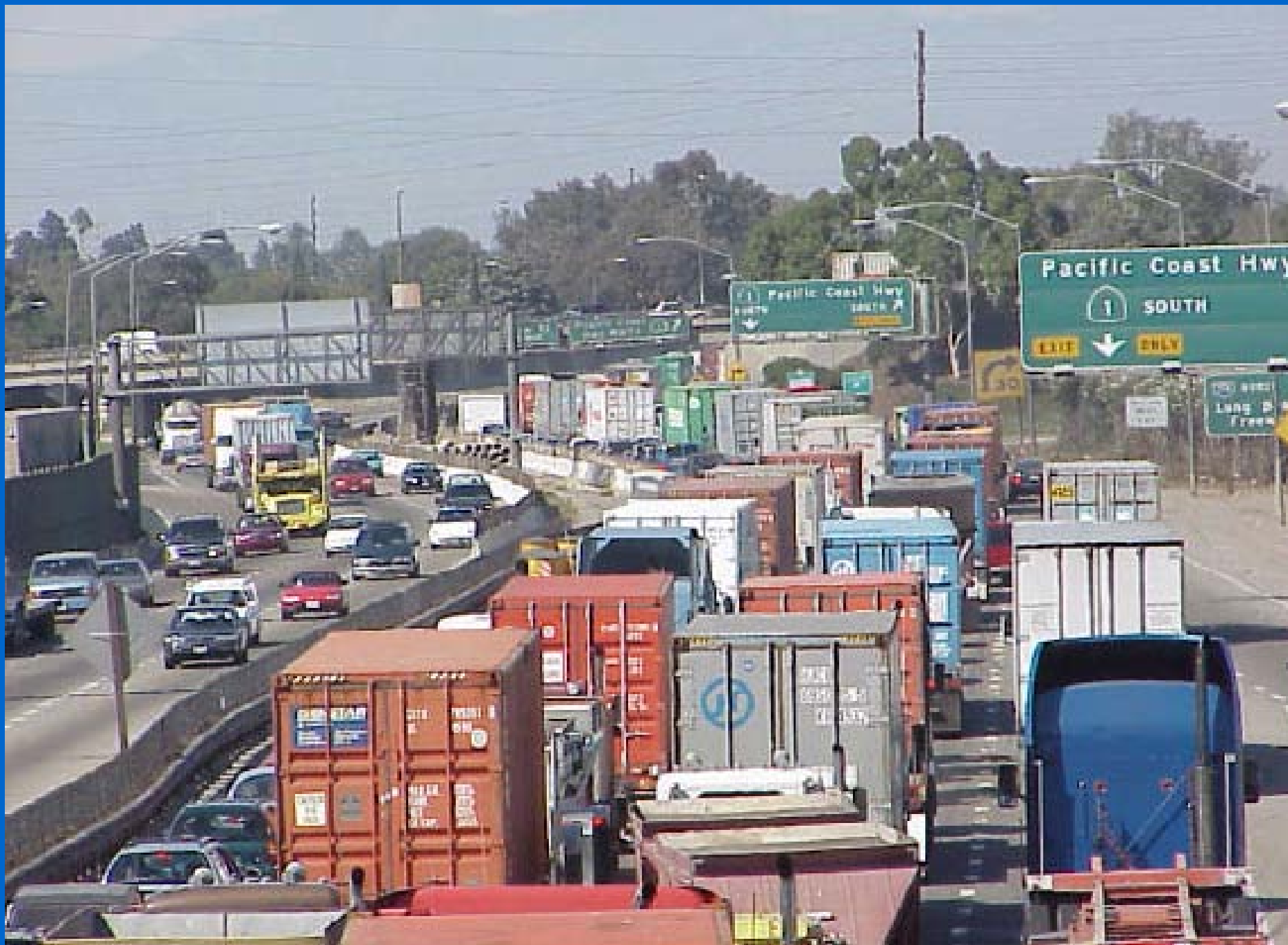




Major Installations



Small Businesses







Goods Movement













Ports of Los Angeles and Long Beach:

- Nation's largest container cargo port complex
- Majority of imported containers destined out of Southern California
- >40 % of nation's containerized imports arrive here
- Cargo tripled in recent years and will double in next decade

Key Messages:

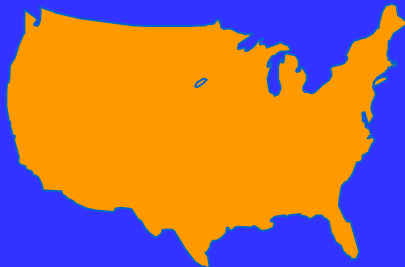
- **The health impacts are *severe***
- **Solutions are *available***
- **All levels of government must *act***



Air Quality Management Who Does What

U.S. Environmental Protection Agency

- **Adopts Health-Based National Air Quality Standards**
- **Regulates Interstate Sources (Trucks, Trains, etc.)**
- **Oversees State Clean Air Plans**



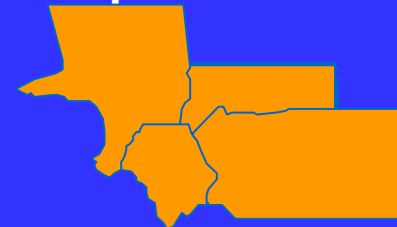
California Air Resources Board

- **Adopts Health-Based State Air Quality Standards**
- **Regulates Cars, Trucks, Fuels, Consumer Products**
- **Approves Local Air District Clean Air Plans**



Local Air Districts

- **Monitor Air Quality; Issue Health Alerts**
- **Prepare Clean Air Plans**
- **Permit and Regulate Businesses**
- **Respond to Nuisance Complaints**



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Planning and Policy

Key Activities

- Develop Air Quality Management Plan
 - Develop & Implement
Mobile/Stationary/Area Source Rules
 - Conduct CEQA Analysis
 - Conduct Socioeconomic Impact Analysis
 - Air Quality Forecasting
 - Emissions Inventories Monitoring
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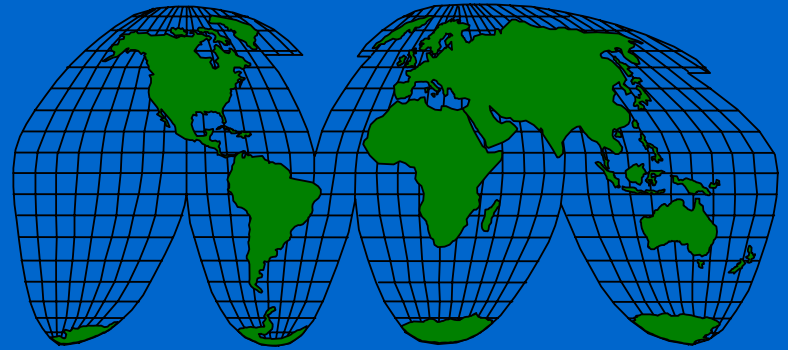
Purpose of AQMP

- Meet Federal/State Requirements
- Minimize Socioeconomic Impacts
- Maximize Local Decision-Making
- Provide Road Map to Clean Air
- Set Framework for Future Rules

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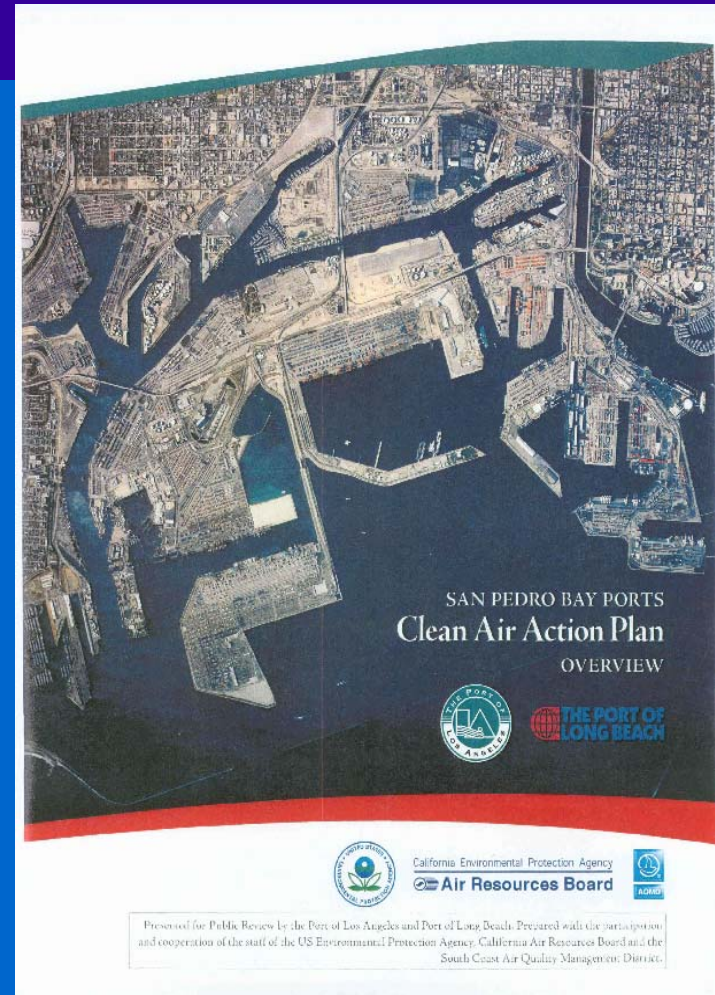
WHAT CAN BE DONE TO REDUCE EMISSIONS?

- Change Products
- Improve Technology
- Eliminate/Reduce Trips
- Buy Smarter
- Research
- Education



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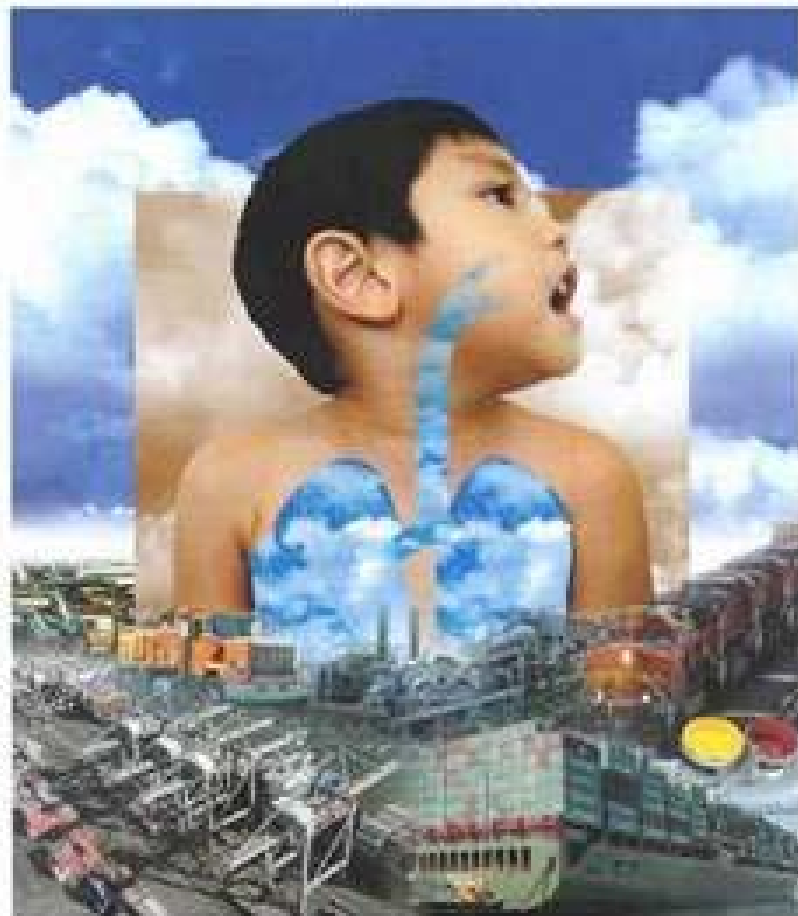
San Pedro Bay Ports Clean Air Action Plan



DRAFT

2007

Air Quality Management Plan



South Coast Air Quality Management District

Clearing the air that we breathe...



AQMD Technology Portfolio

- Near-term to longer-term
- “Planting many seeds”
- Developing “Pathways”

Fuel Cell



Renewables

Plug-ins



Clean Transit



Heavy-Duty
Natural Gas

Fuel Cells



CNG

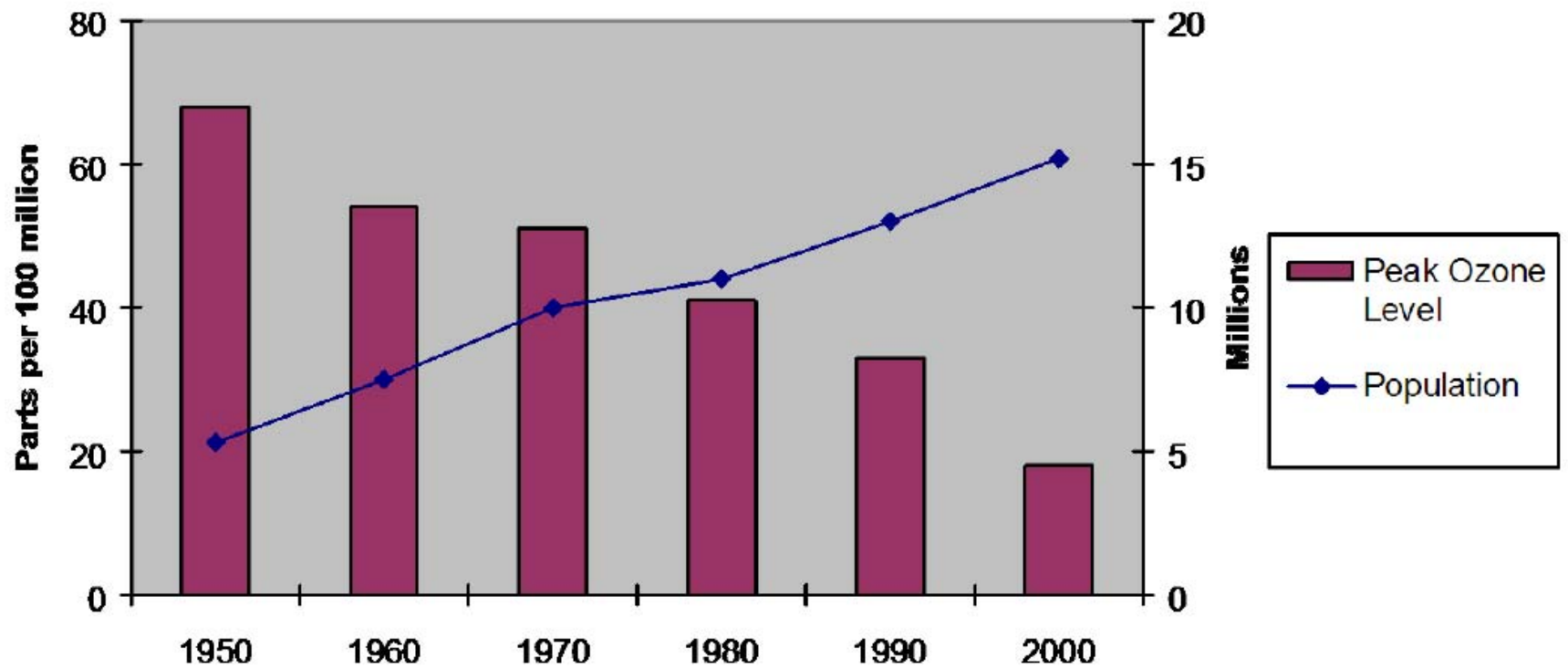


Low Emissions

Zero Emissions



50 Years of Progress in Reducing Ozone Levels

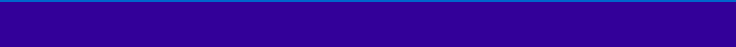


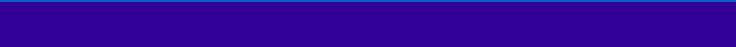


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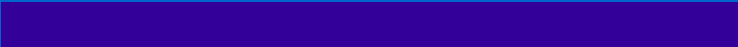
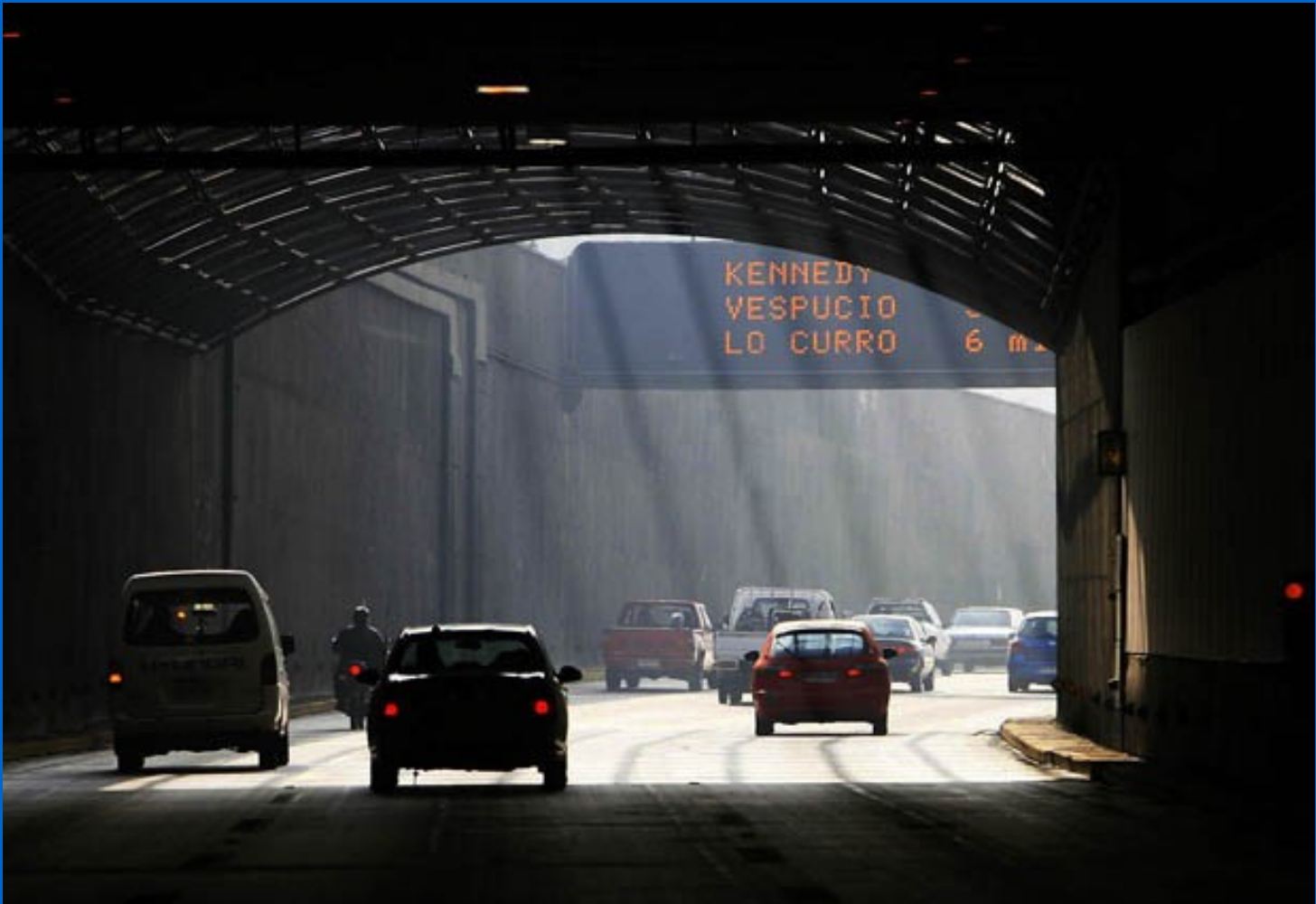




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AQMD

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