

San Joaquin Valley Unified Air Pollution Control District

Town Hall Meetings

- Wednesday, July 26, 1pm,
Bakersfield
- Wednesday, July 26, 7pm,
Delano
- Thursday, July 27, 1pm,
Fresno
- Thursday, July 27, 7pm,
Huron
- Friday, July 28, 9am,
Modesto
- Friday, July 28, 2:30pm,
Stockton

**Did You Know Our Air
Is Getting Cleaner?**

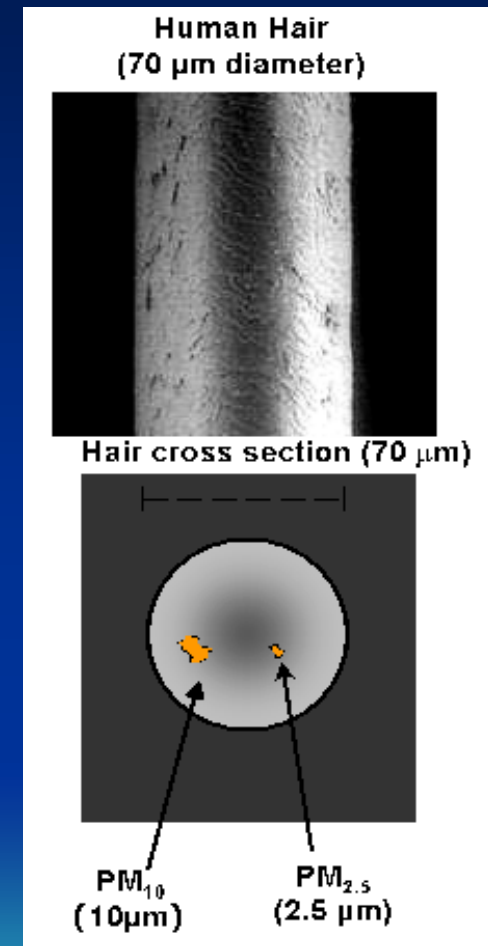
However, we still have a long way to go.

Introduction:
Pollutants in the Valley
Health, Economic, and
Environmental Effects
Health-based Standards



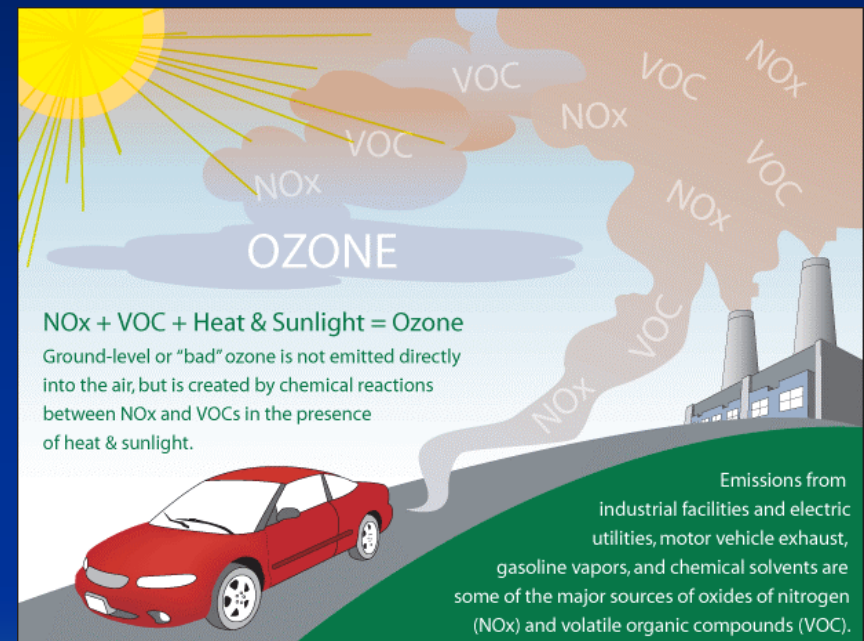
Pollutants in the Valley

- **Particulate Matter (PM)**
 - Wintertime problem
 - May be emitted as dust and soot
 - May form in the atmosphere from other compounds
 - PM₁₀ and PM_{2.5}



Pollutants in the Valley

- Ozone
 - Summertime problem
 - Smog
 - Not emitted directly
 - Forms when emissions from human activities react in sunlight
 - 1-hour and 8-hour averages



Health Impacts

- **Ozone health effects and symptoms:**
 - Chest pain
 - Coughing
 - Throat irritation
 - Congestion
 - Reduced lung function
 - Inflamed lung linings
 - Lung tissue scarring
 - Wheezing
 - Painful breathing
 - Higher hospital admissions
 - More emergency room visits

Economic Impacts

- Hall's study, *The Health and Related Economic Benefits of Attaining Healthful Air in the SJV*
 - Analyzed the benefits of attaining both the PM2.5 and 8-hour ozone standards
 - Could save the Valley more than \$3 billion per year in health care costs and lost school and work days
- Findings & assumptions are debatable, but the study emphasizes that not attaining the federal standards affects health and therefore the economy

Environmental Impacts

- **Ozone's environmental impacts**
 - Makes plants more susceptible to disease, insects, and harsh weather
 - Damages leaves of trees and other plants, damaging the appearance of cities, forests, parks, and recreational areas
 - Reduces agricultural yields for economically important crops



Economic Impacts

- Ozone levels are highest in the summer, when crops are growing
- A 2003 University of Illinois study found that a 20% rise in ozone exposure resulted in a 20% drop in crop yield for soy beans.
- Damage to crop plants in the United States may exceed several billion dollars per year, (e.g. Heck et al., 1983; Adams et al., 1988)

Federal Standards

- EPA sets federal ambient air quality standards
- Ambient standards protect public health, including the health of "sensitive" populations.
- The CAA requires periodic review (every 5 years) of standards based on best science, including laboratory, clinical, and community health studies.
- Standard setting process involves extensive peer review & opportunity for public comment.
- Standards are not set in consideration of cost or feasibility of attainment.

Federal Standards

- **States and Districts put together plans outlining the rules and programs that will be undertaken to reduce air pollution.**
- **Attainment of federal standards protects public health**

Current State of Valley
Air Quality:
Emissions Reductions

Measured Ozone & PM levels



State of Air Quality Emissions Inventory

- Ozone and PM2.5 precursor emissions have been substantially reduced in the SJV

Reductions, 1990-2005

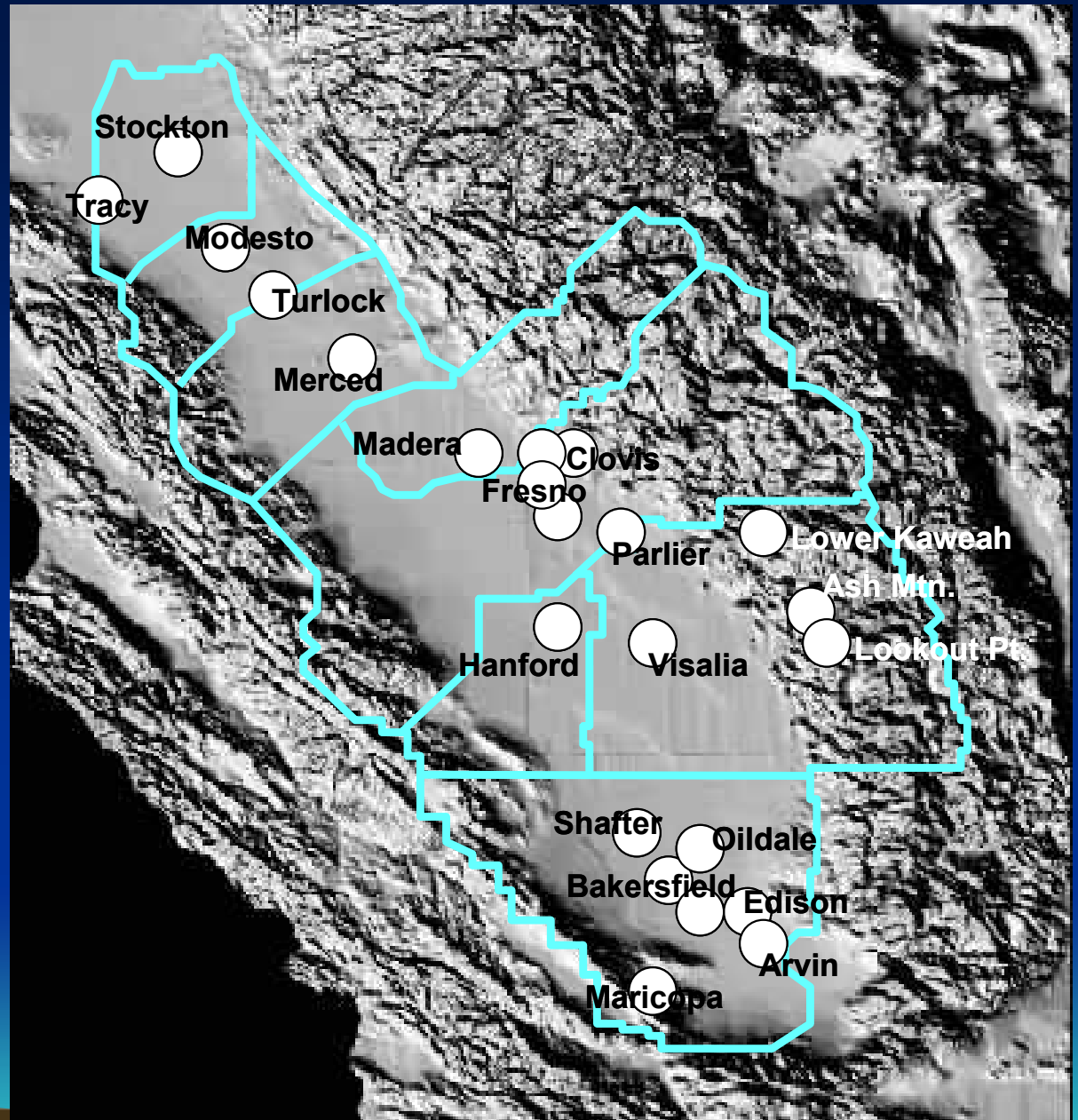
NOx Emissions Reductions	41%
ROG Emissions Reductions	40%
Directly Emitted PM10	13%
Directly Emitted PM2.5	10%

Good News!

Reductions through Regulations

- The District has toughest rules in the state
- Over 500 rules & amendments since 1992
 - Fireplaces
 - Voluntarily expanded Smog Check II testing
 - Wine production and storage
 - Conservation Management Practices (farms)
 - Indirect Source Review (development)
 - Confined Animal Feeding Operations
 - Engines, boilers, turbines, glass-melting furnaces

Ozone Monitoring



State of Air Quality

- Valley ozone has improved from 1990
- Number of days with high levels, 3-year averages:

	1990	2005
8-hour standard	126	105
1-hour standard	58	18

State of Air Quality

- **Particulate Matter**
 - **PM10 attainment**
 - **Annual average PM2.5 levels have improved since monitoring began in 1999**

	1999	2005
PM2.5 days over standard	35-38	12
PM2.5 annual average, percent over standard	87%	33%

State of Air Quality

Problem Pollutants

- **8-hour ozone**
 - The Valley has one of the most severe ozone problems in the country.
 - Compared to Los Angeles, the Valley has lower peak ozone levels, yet more days with unhealthy levels.
 - Large number of days with ozone above the level of the standard
 - Peak readings are slow in declining
- **PM2.5**
 - Most sites still exceed annual PM2.5 standard

A Long Way to Go

Challenges:
Legal Timelines

Natural Conditions

Carrying Capacity

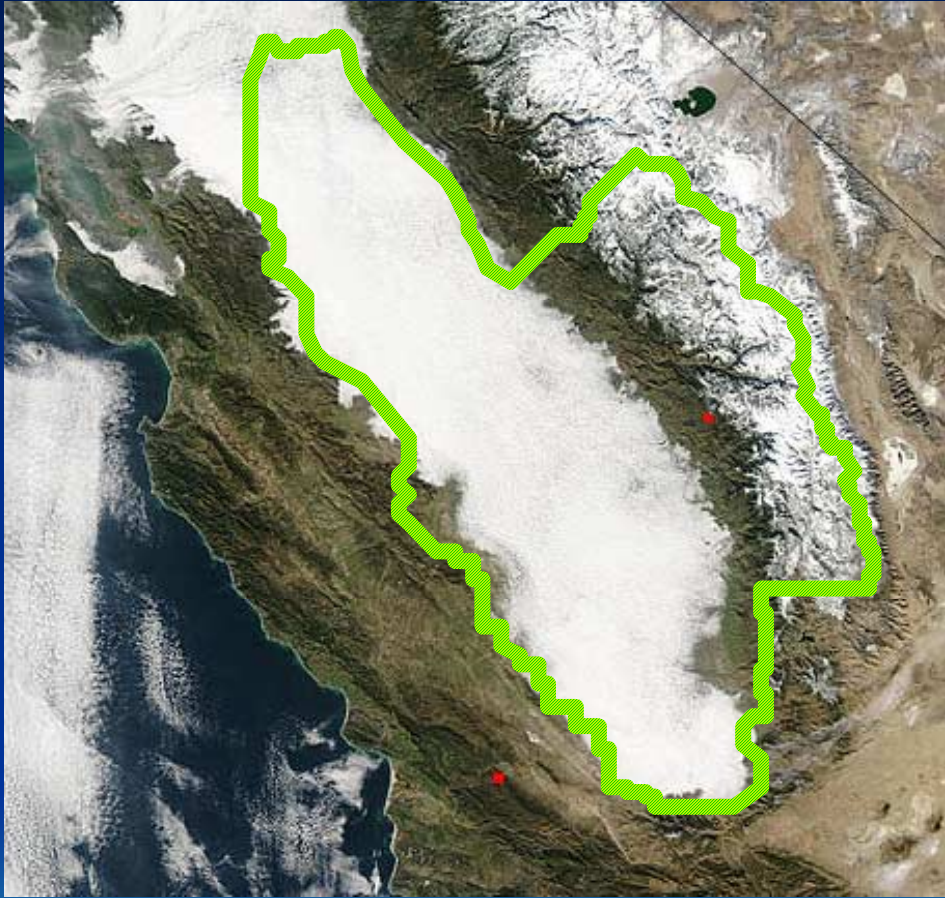
Jurisdiction



Federal Requirements

Requirement	Deadline for Serious Areas
Attainment demonstration, RFP, and NSR SIP submission to EPA	June 15, 2007
Attainment date	June 15, 2013
Compliance date: achieve all emissions reductions needed	By start of 2012 ozone season

Natural environment & air quality

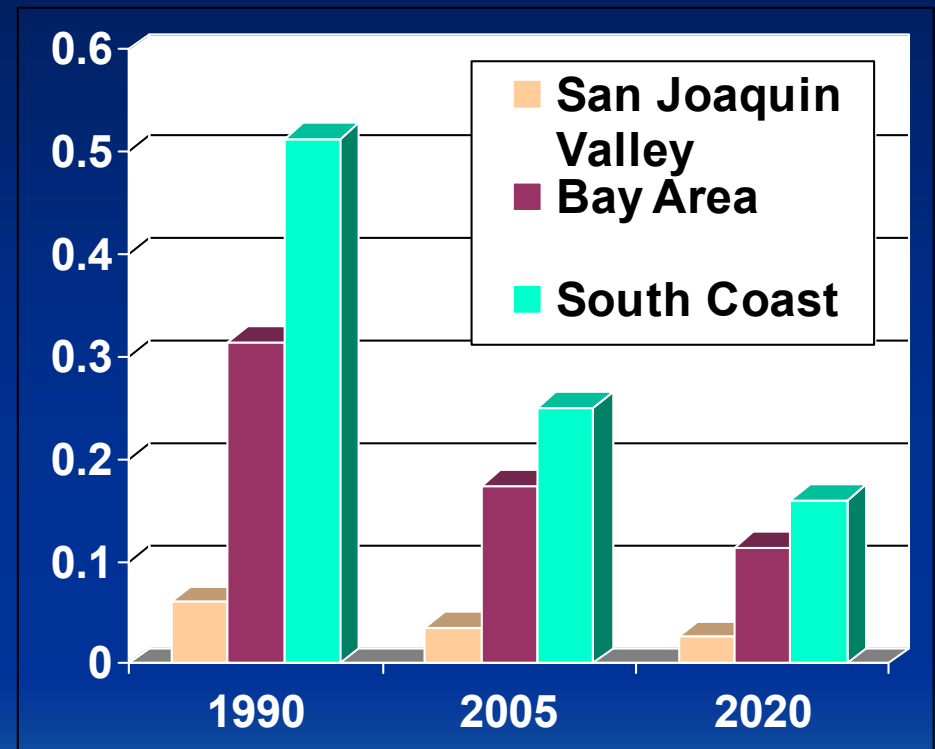


The District's topography and climate create ideal conditions for serious air pollution.

Effects of natural environment

- Valley's ozone air quality problem worse than SF and about same as LA
- But SJV emissions per unit area (emissions density) much less than SF or LA
- Natural factors enhance ozone air pollution in SJV

ROG + NO_x
tons/day per square mile



Carrying Capacity

- Ozone “carrying capacity” is the maximum amount of NO_x and VOC emissions that would allow for attainment of the ozone standard.
- Preliminary ARB modeling indicates that the Valley may need to reduce projected NO_x and VOC emissions by 60%

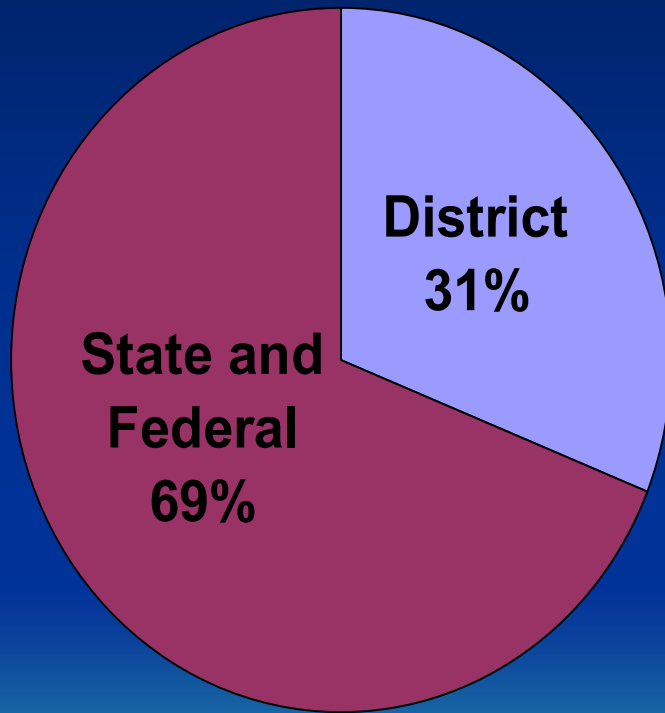
Carrying Capacity & Future Reductions

- 60% reduction of NOx and VOC emissions would be beyond reductions being achieved by current regulations.
- Population growth can offset emissions reductions.

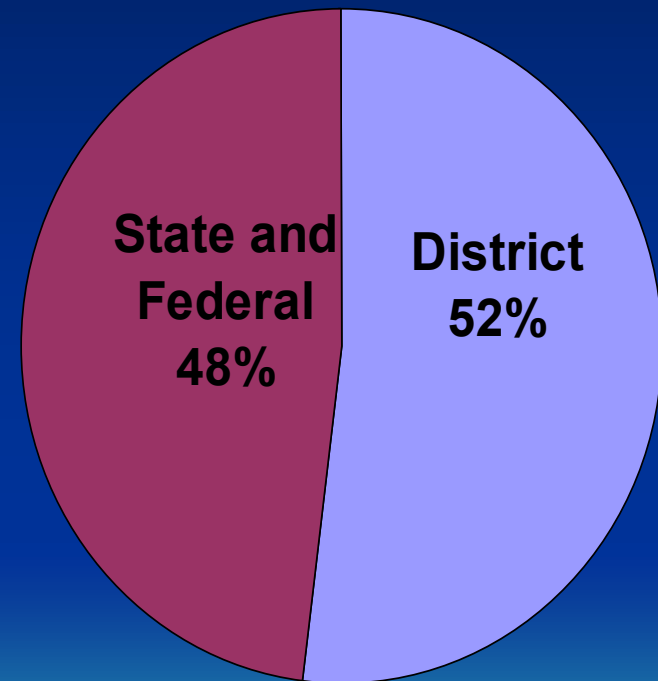
2000	2010	2020
3.2 million	4.0 million	4.8 million

Jurisdictional Puzzle

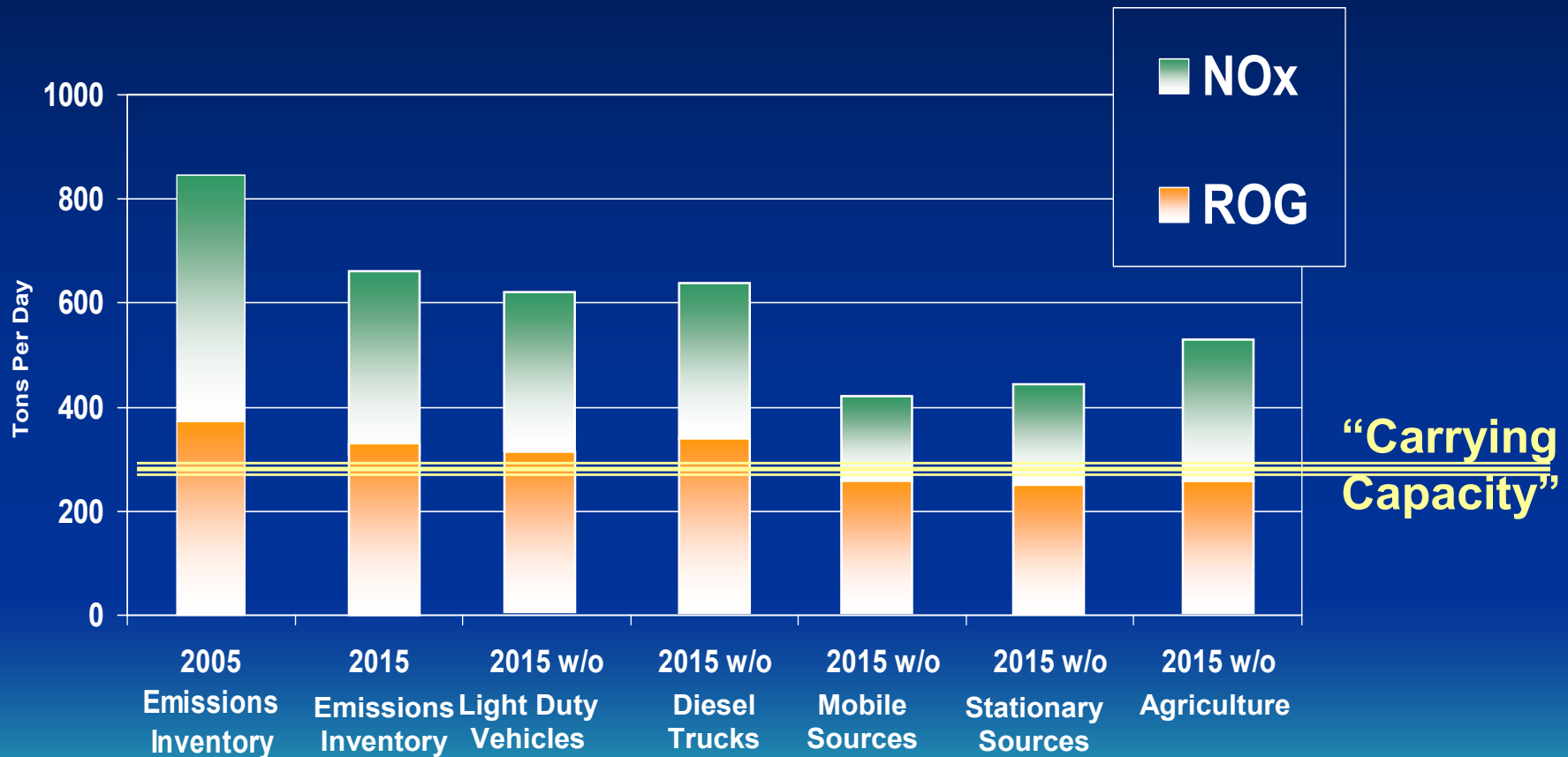
NOx Emissions/Jurisdiction



VOC Emissions/Jurisdiction

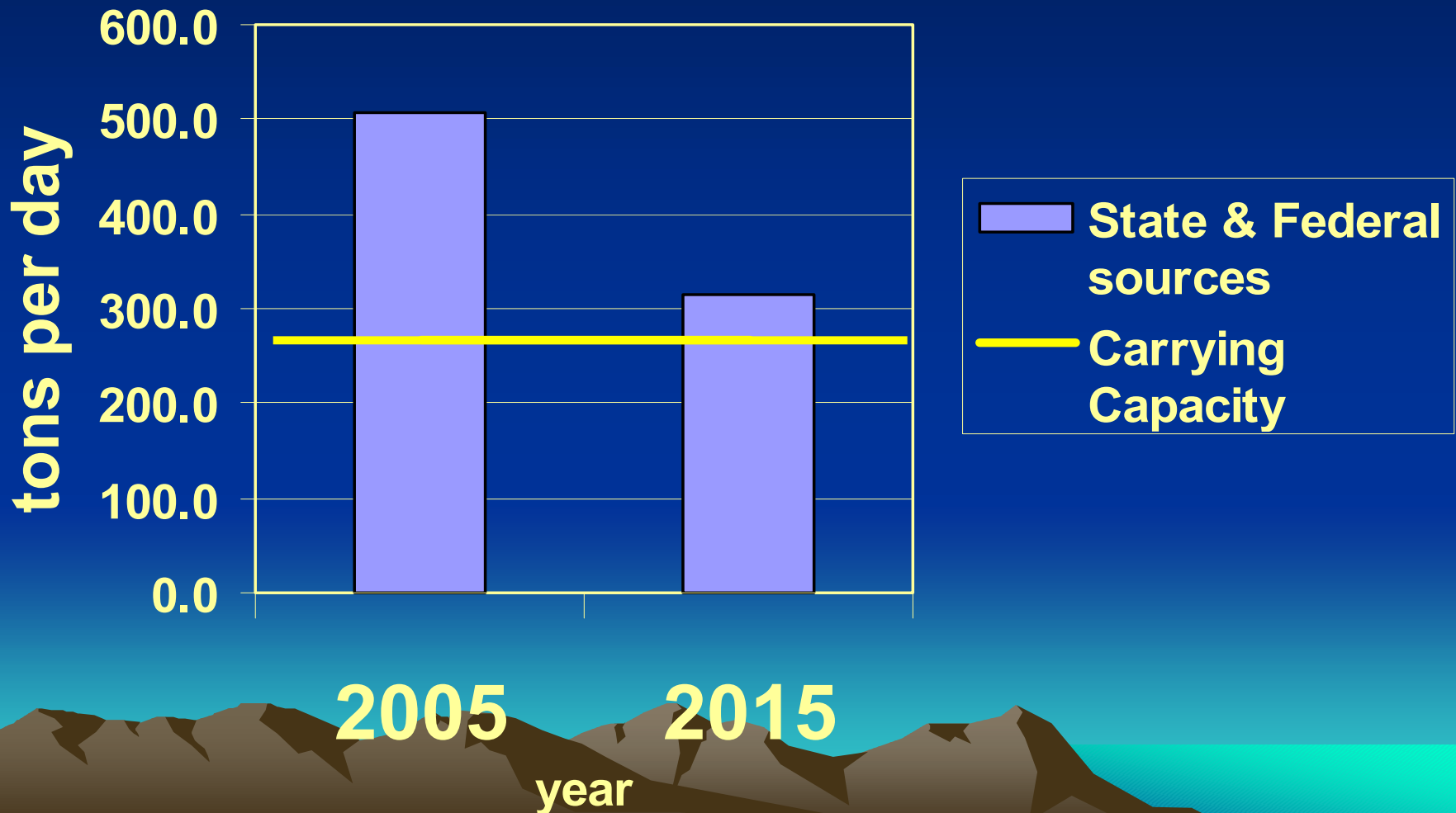


60% Reduction in Emissions: How Difficult?



60% Reduction in Emissions: How Difficult?

Total ROG & NOx with Carrying Capacity



Strategies



How Do We Get There?

Strategy Issues

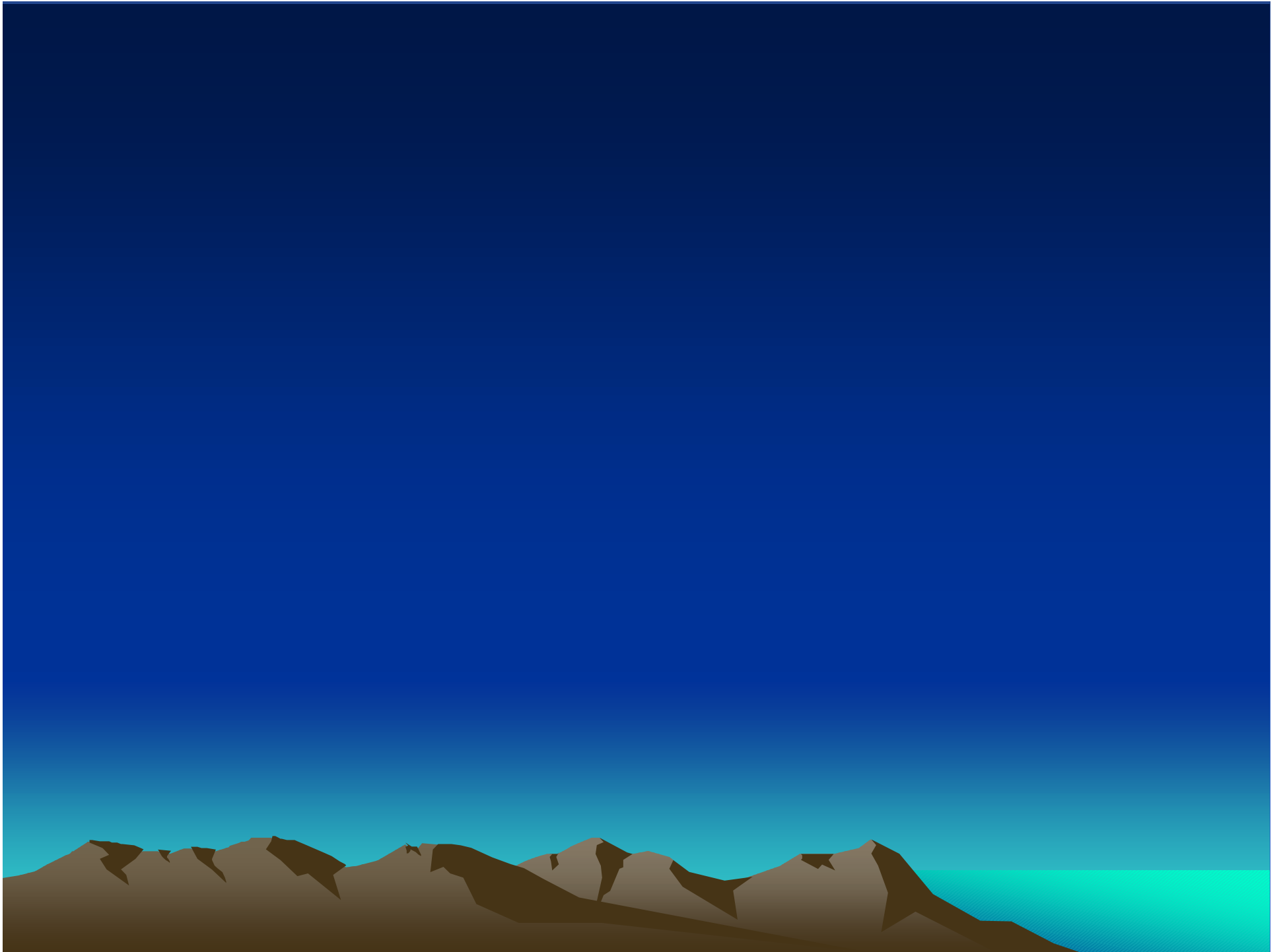
- How many reductions do we really need?
- Will strategies that were effective for 1-hour ozone work for 8-hour ozone?
- How can we integrate the PM and Ozone strategies?
- Can we refine our strategies to conserve resources?
 - Seasonal / episodic controls?
 - Sub-regional controls?
 - What pollutants?
 - Other innovative/new approaches?

Four-faceted Control Strategy

1. **Regulatory component - traditional “command-and-control”**
2. **Incentive-based strategies**
3. **Alternative compliance - allow sources to achieve equivalent reductions from alternative sources**
4. **Local, State, and Federal sources & partnerships - Local, State, and Federal agencies must each reduce emissions from the sources under their jurisdiction**

Discussion





Air Pollution Control in California, 1971 Annual Report

- “It is apparent that by 1980, motor vehicles will not be the major source of hydrocarbons and oxides of nitrogen, and greater emphasis will have to be placed on emissions from nonvehicular sources.” -- page 34.
- Sections titled “EVALUATION OF LOW EMISSION VEHICLES” and “NATURAL GAS AND LPG FUELED VEHICLES”

Changes in Mobile Source NOx Emissions

