# Emission Inventory Development

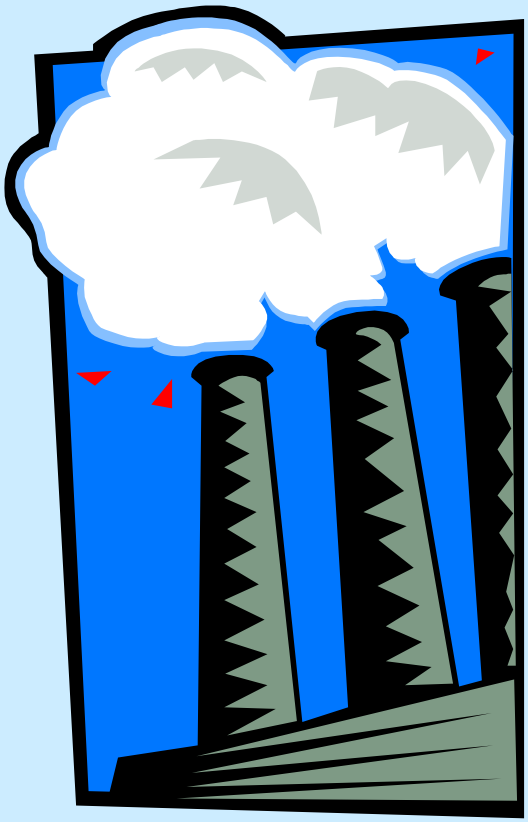
***2003 Ozone Plan***

***Technical Issues Workshop***

***July 23, 2003***

**Don Hunsaker**

# What is an Emissions Inventory?

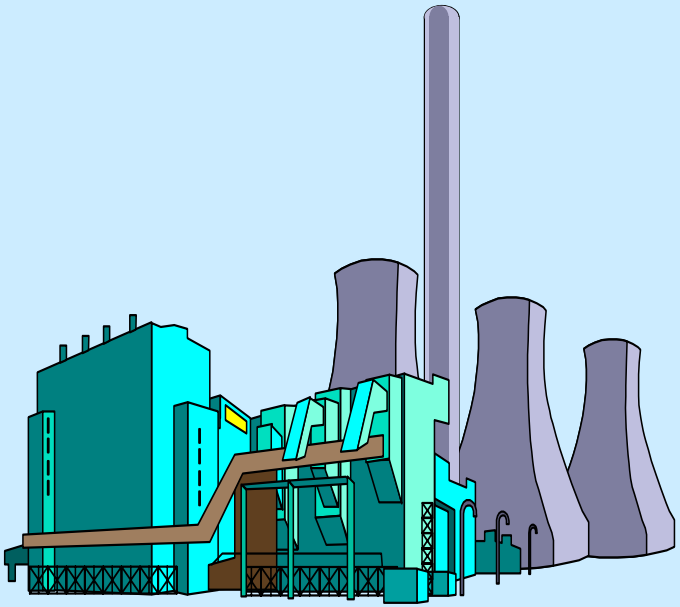


- Listing of air pollutants emitted per unit time per source type
- Used to quantify what goes into the air

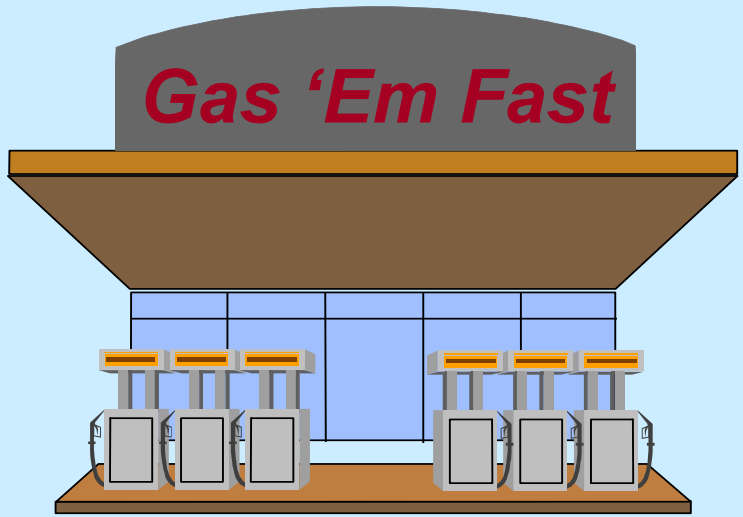
# Types of Sources

- Stationary
- Area-Wide
- Mobile
- Non-Anthropogenic

# Stationary Sources

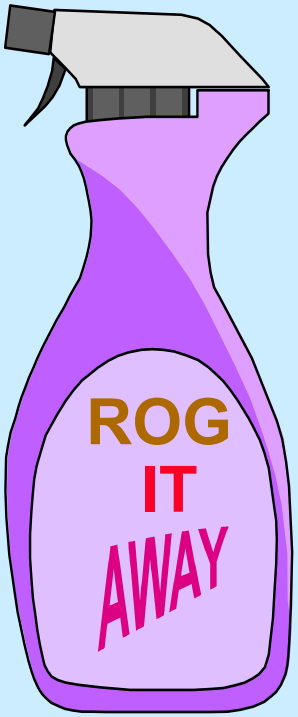


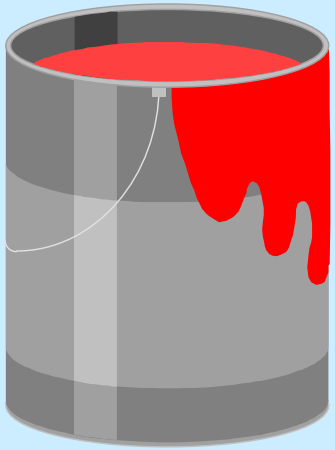
Point

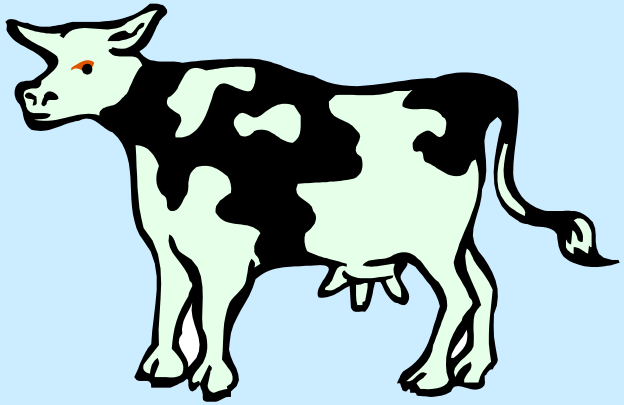


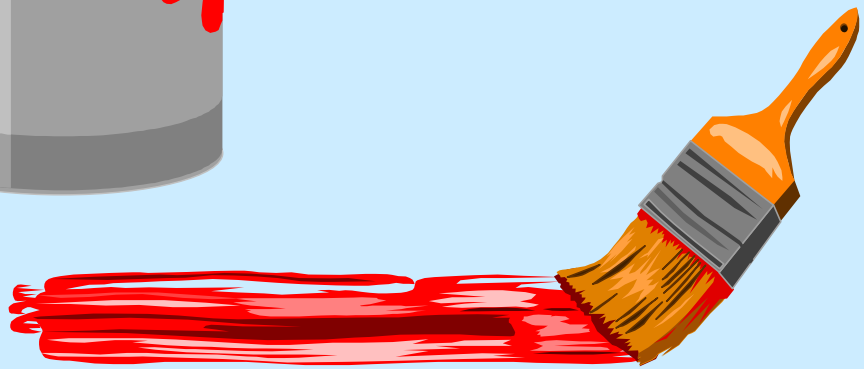

Aggregated Point

# Area-Wide

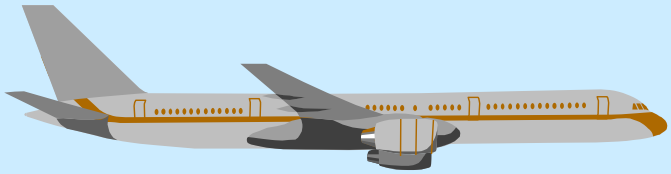


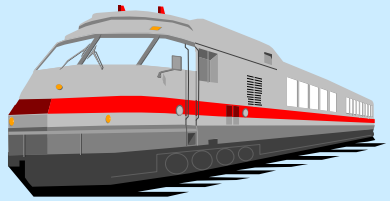



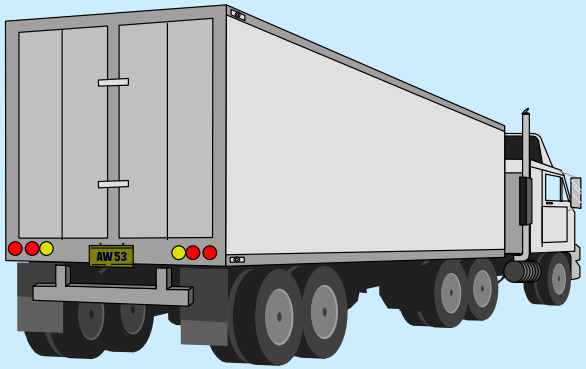




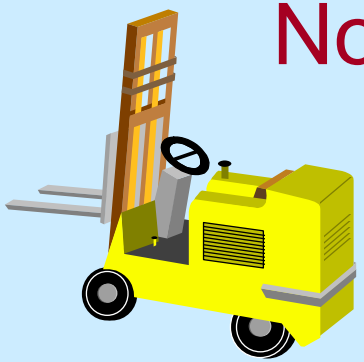
# Mobile



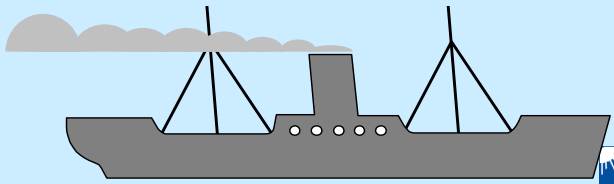




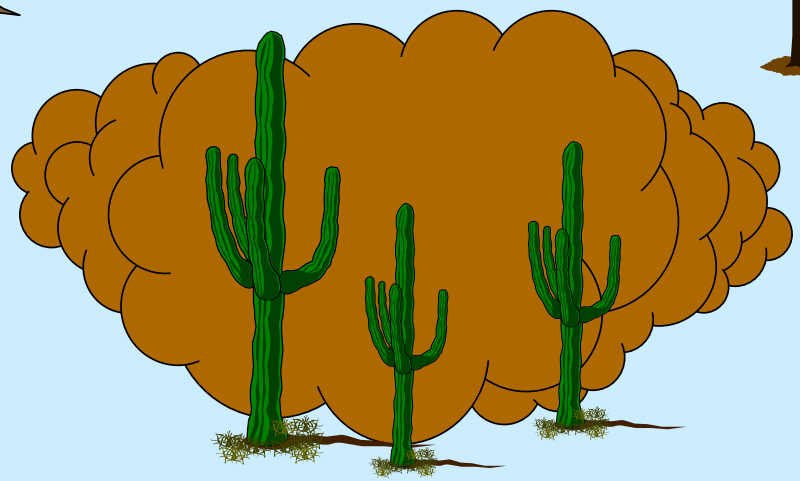
## Non-Road



## On-Road



# Non-Anthropogenic



# Who Prepares Inventories?

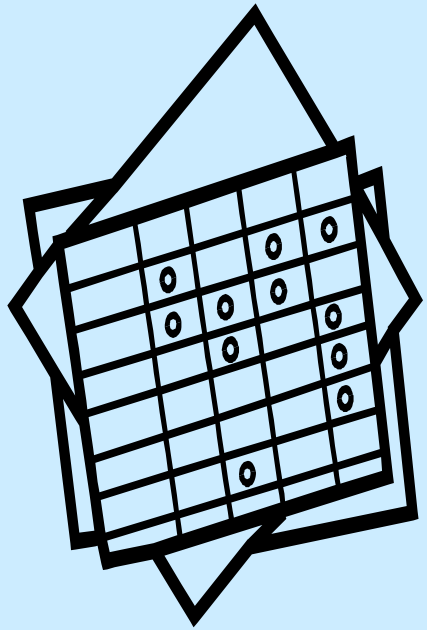
- Local Districts
  - Develop Local Point Source Inventory
  - Estimate Emissions for ~1/3 of Area Source Categories
- ARB
  - Estimate Mobile Source Emissions
  - Estimate Emissions for ~2/3 of Area Source Categories
  - Develop and Report Statewide Inventory

# Why Prepare Emissions Inventories?

- Control strategy development
- Rule development
- SIP development
- SIP tracking/Rate of Progress
- Public notification
- Emission reduction credit program

# Types of Inventories

- Planning
  - Baseline
  - Projected
  - Seasonal
- Modeling
  - Gridded
  - Episode-specific



# Compiling Emissions Inventories

- Some emissions are directly measured at the source (large stationary sources)
- Most are estimated using emission factors & activity levels

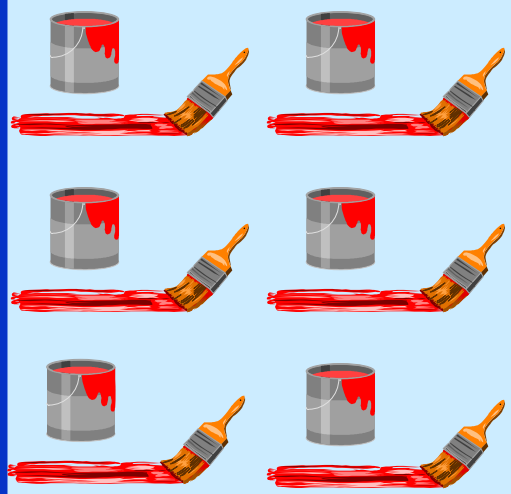
# How Do We Estimate Emissions?

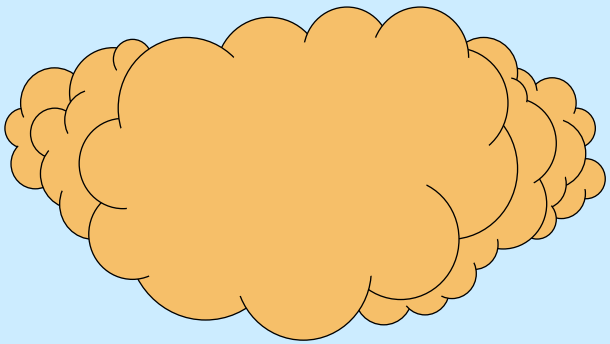
# Emission Calculation

**Process Rate (Activity)**

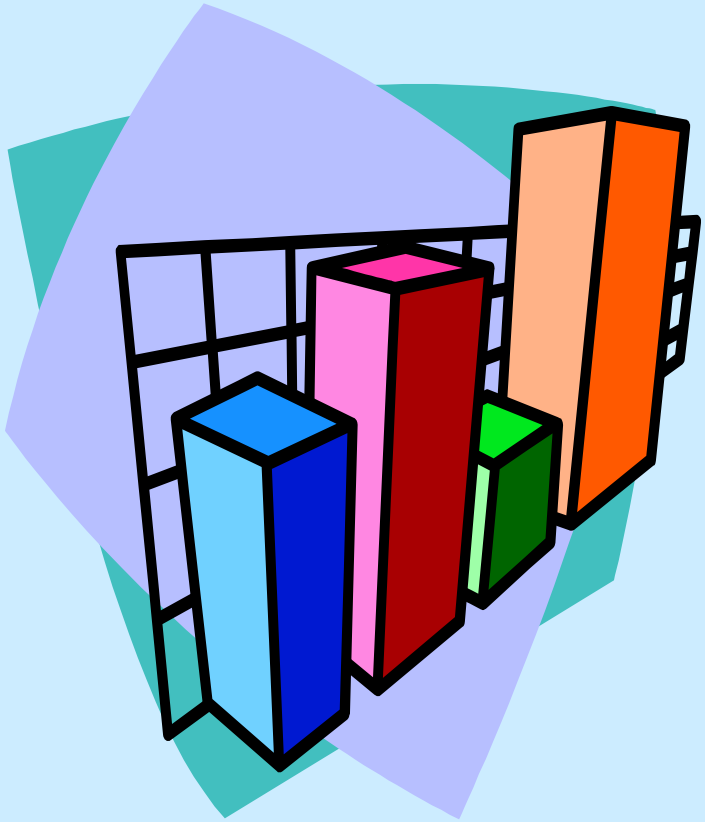
**Emission Factor**

Number of Units **x** Emissions per Unit **=** **Total Emissions**





# Emission Forecasting



**Emissions trends over time are adjusted (grown) to reflect economic growth and decreased (controlled) to reflect implementation of rules and regulations**

# Emission Forecasting (cont.)

## Sources of Growth Information

- District data supplied by COGs
- Economic activity studies contracted by ARB
- Demographic data

## Sources of Control Information

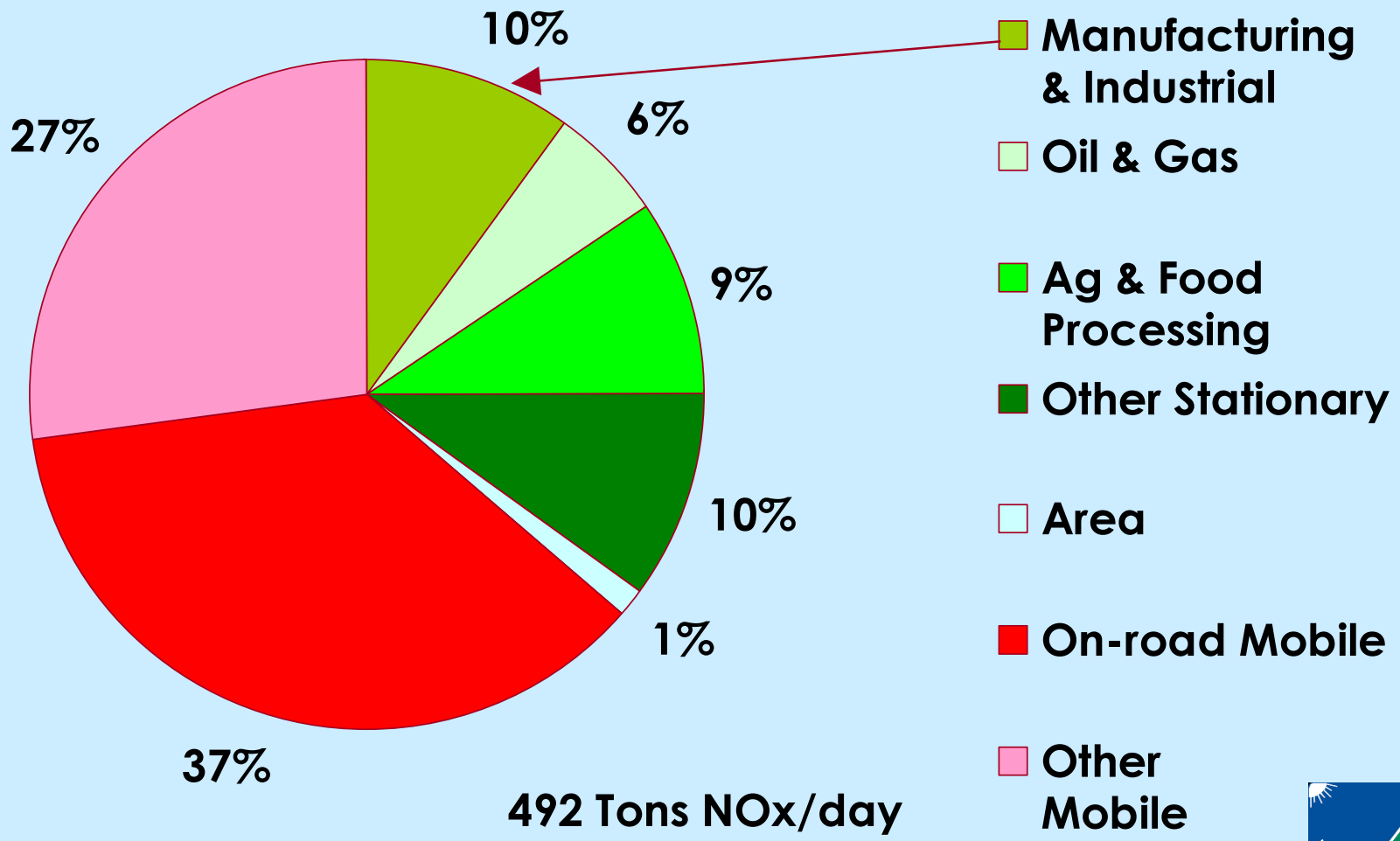
- District rules
- ARB regulations
- Other regulatory agencies (e.g., EPA, Calif. Dept. of Pesticide Reg.)

# Emissions are Evaluated from Several Perspectives

- By source category (stationary, mobile, area, etc.)
- Over time (trends showing growth and controls)
- Over space (county, region, air basin, etc.)

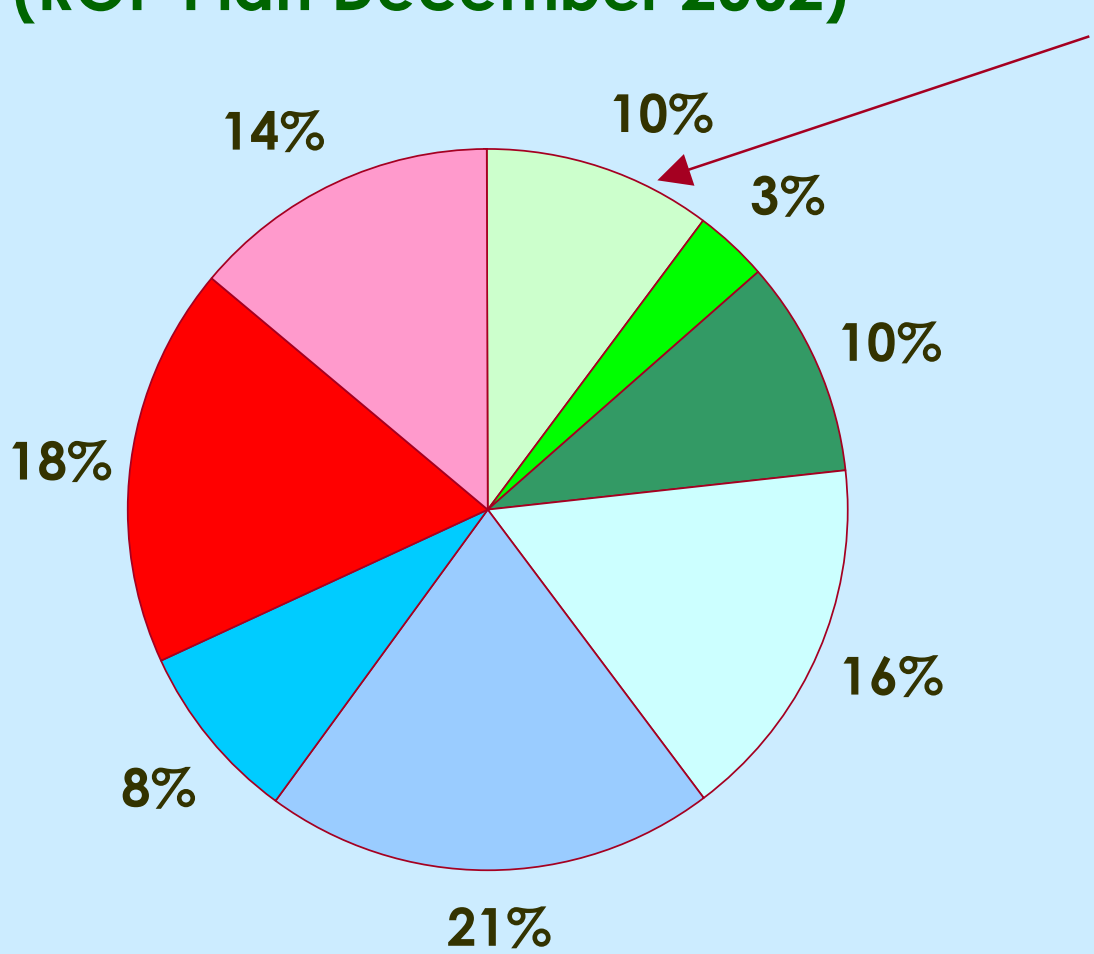
# 2005 Estimated Summer Average Emissions of Oxides of Nitrogen

## (ROP Plan December 2002)

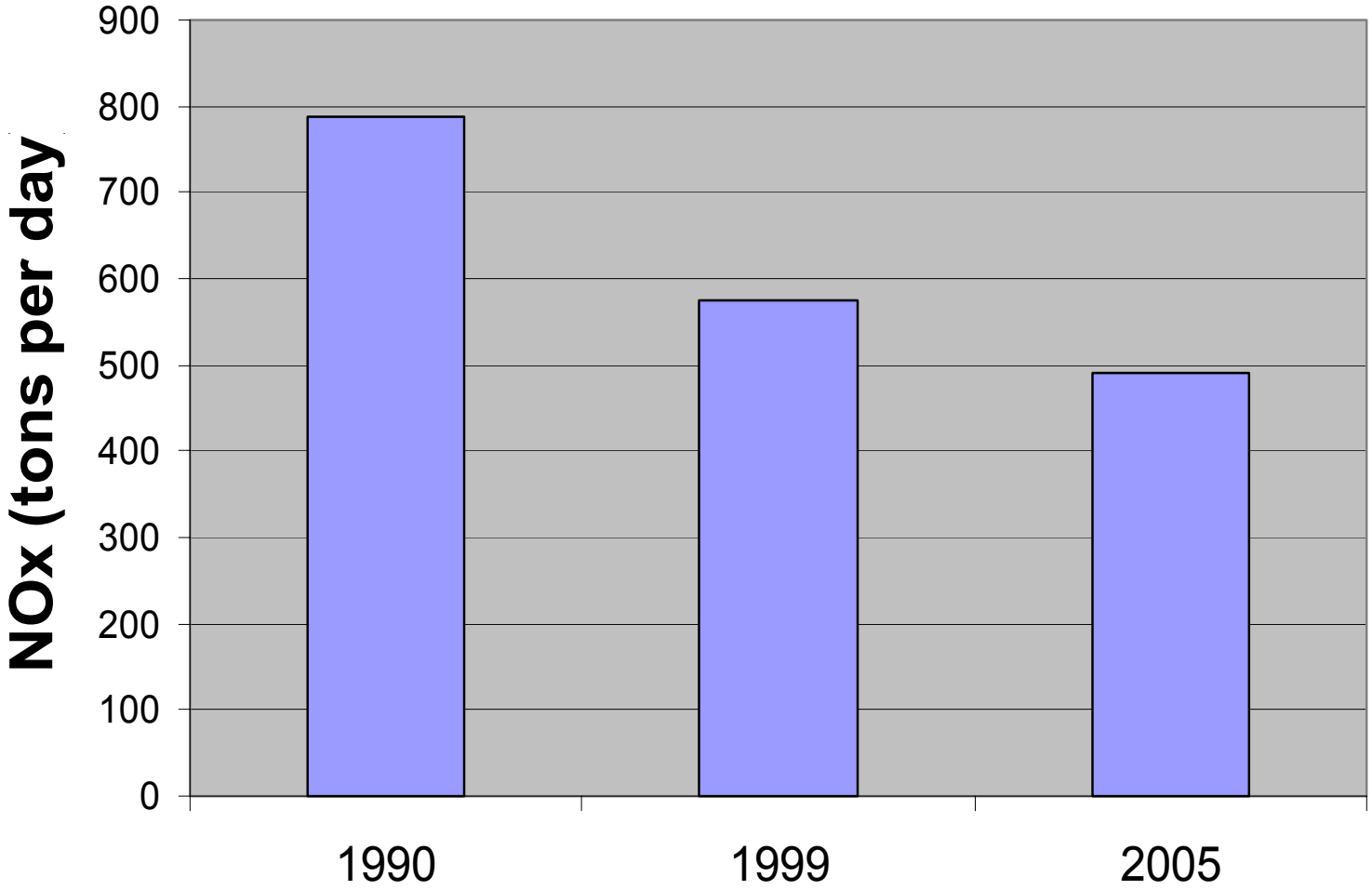


# 2005 Estimated Summer Average Emissions of Reactive Organic Gases

## (ROP Plan December 2002)

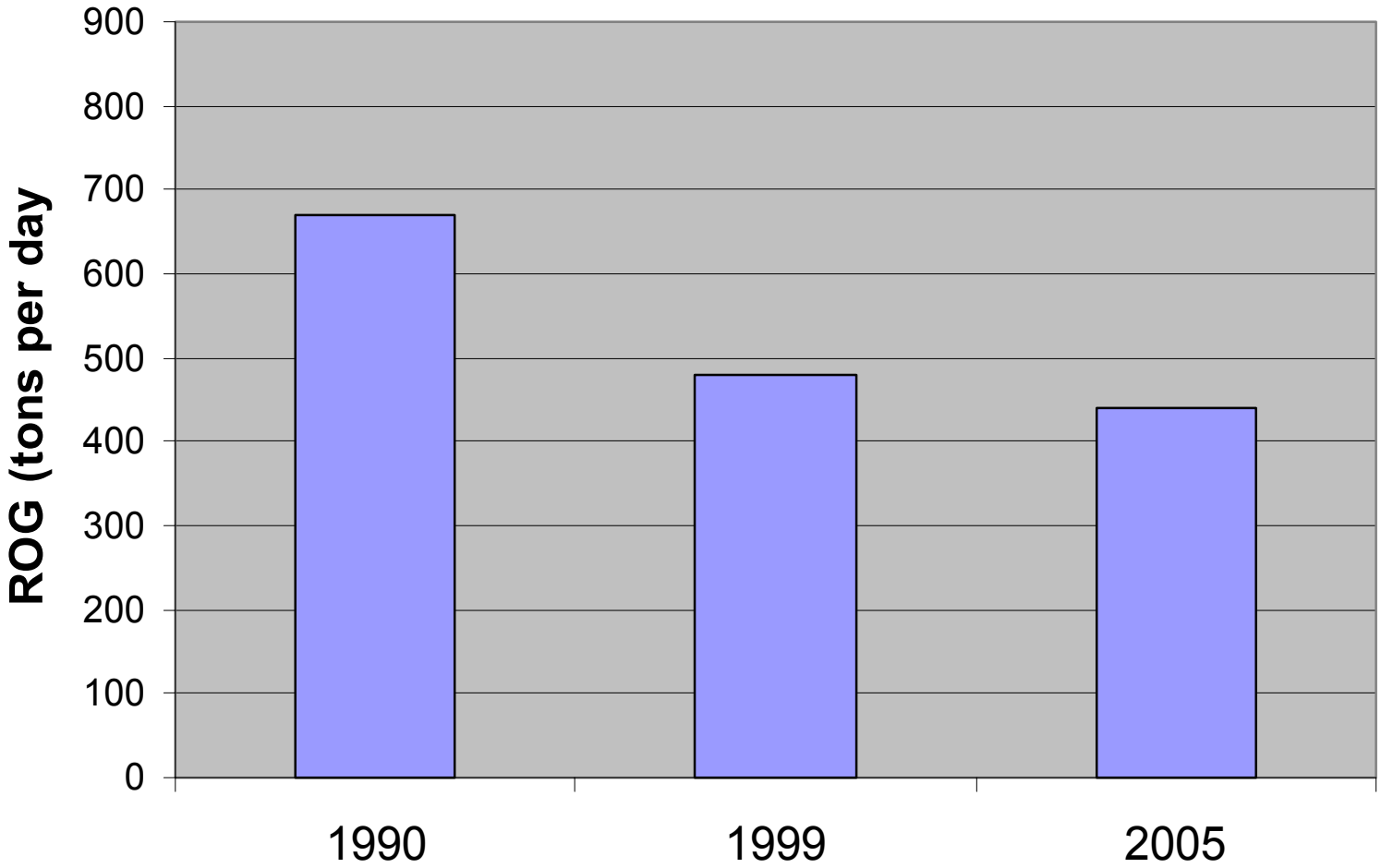


# NOx Inventory 1990-2005



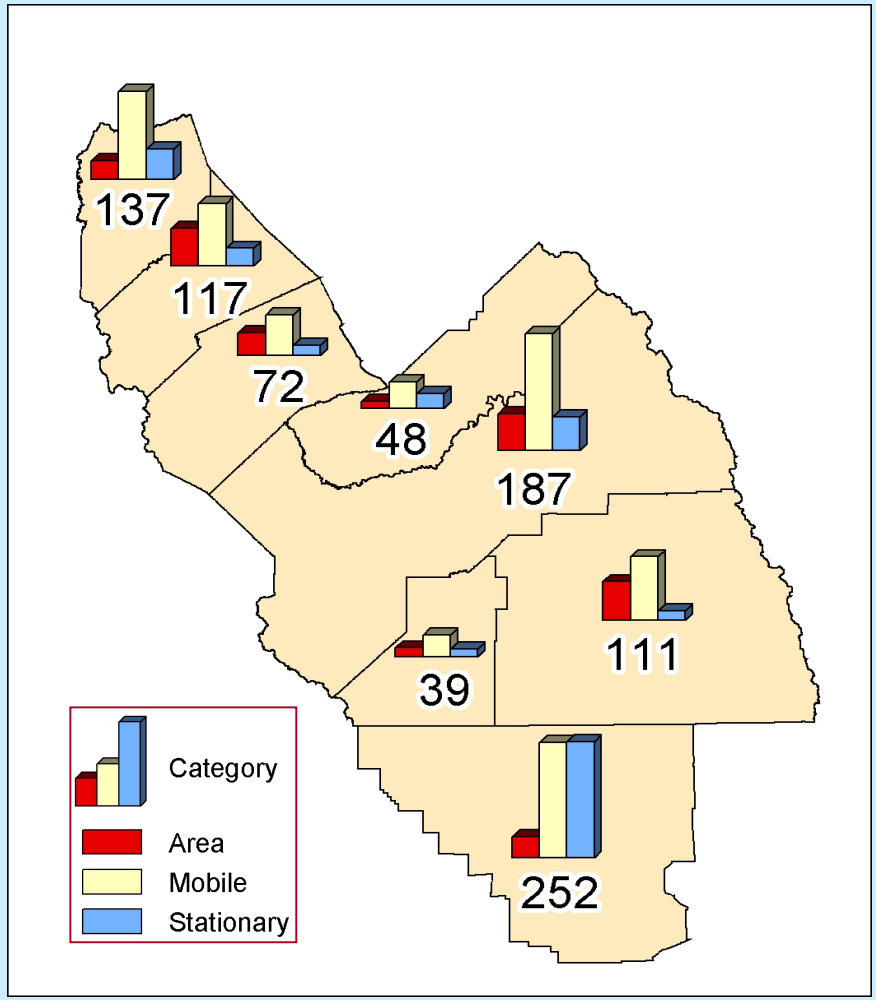

(ROP Plan Summer Seasonal Inventory – December 2002)

# ROG Inventory 1990-2005




(ROP Plan Summer Seasonal Inventory - December 2002)

# Total 2002 precursor emissions ROG+NOx (tpd) by county & category



# SJVAB Inventory Status

- Planning inventories being obtained from ARB for 1990, 2002, 2005, 2008 and 2010 for inclusion in plan
- Modeling inventories being developed for episodes of interest
- At some point inventory is “locked” and plan proceeds w/ this inventory

# Summary

- Emission inventories are used for planning and modeling
- Planning inventories are grown and controlled in future years
- SJVAB planning inventory shows reductions over time, mobile source dominance of inventory