Ozone Challenges and Agriculture in the San Joaquin Valley

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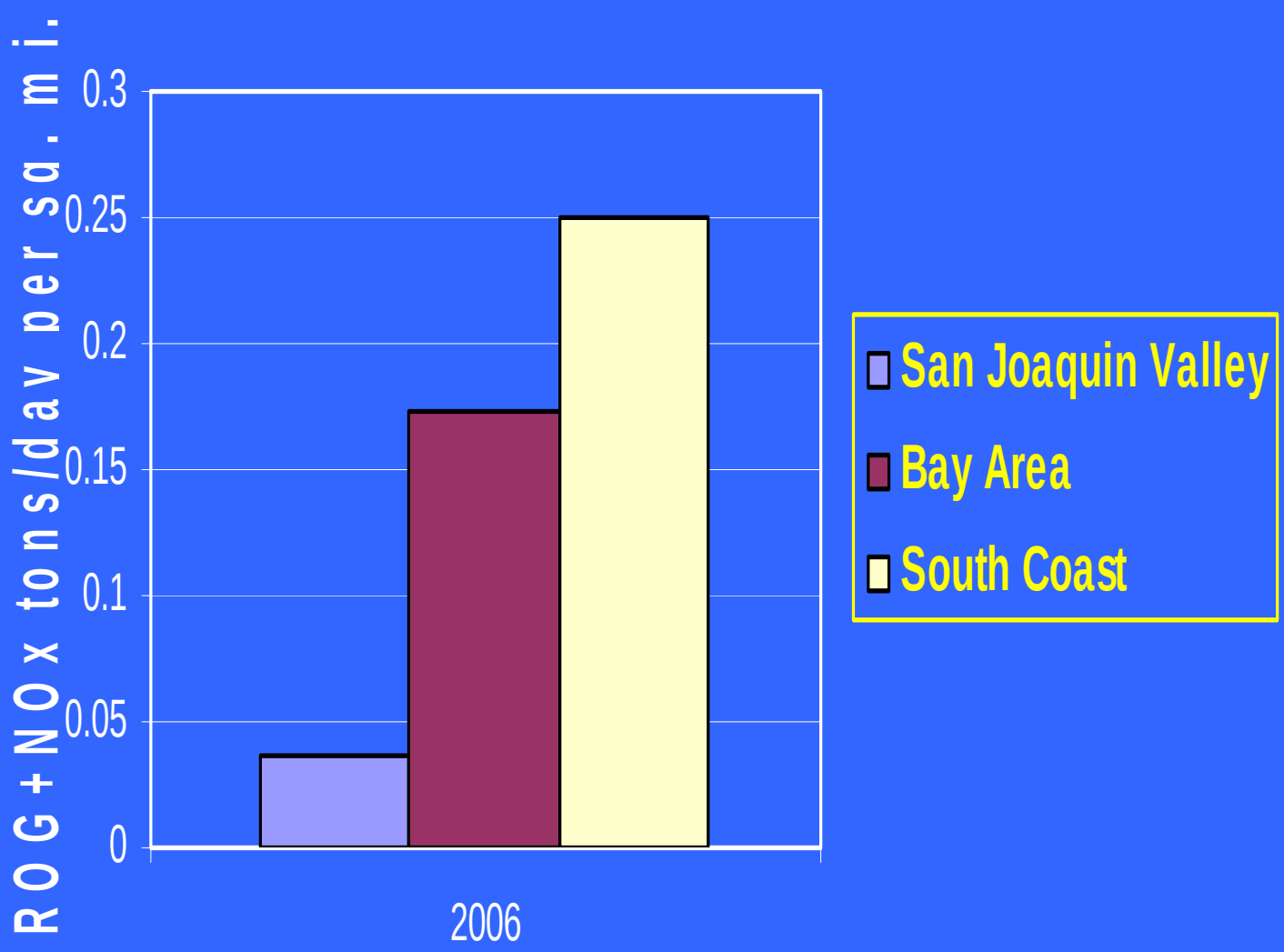
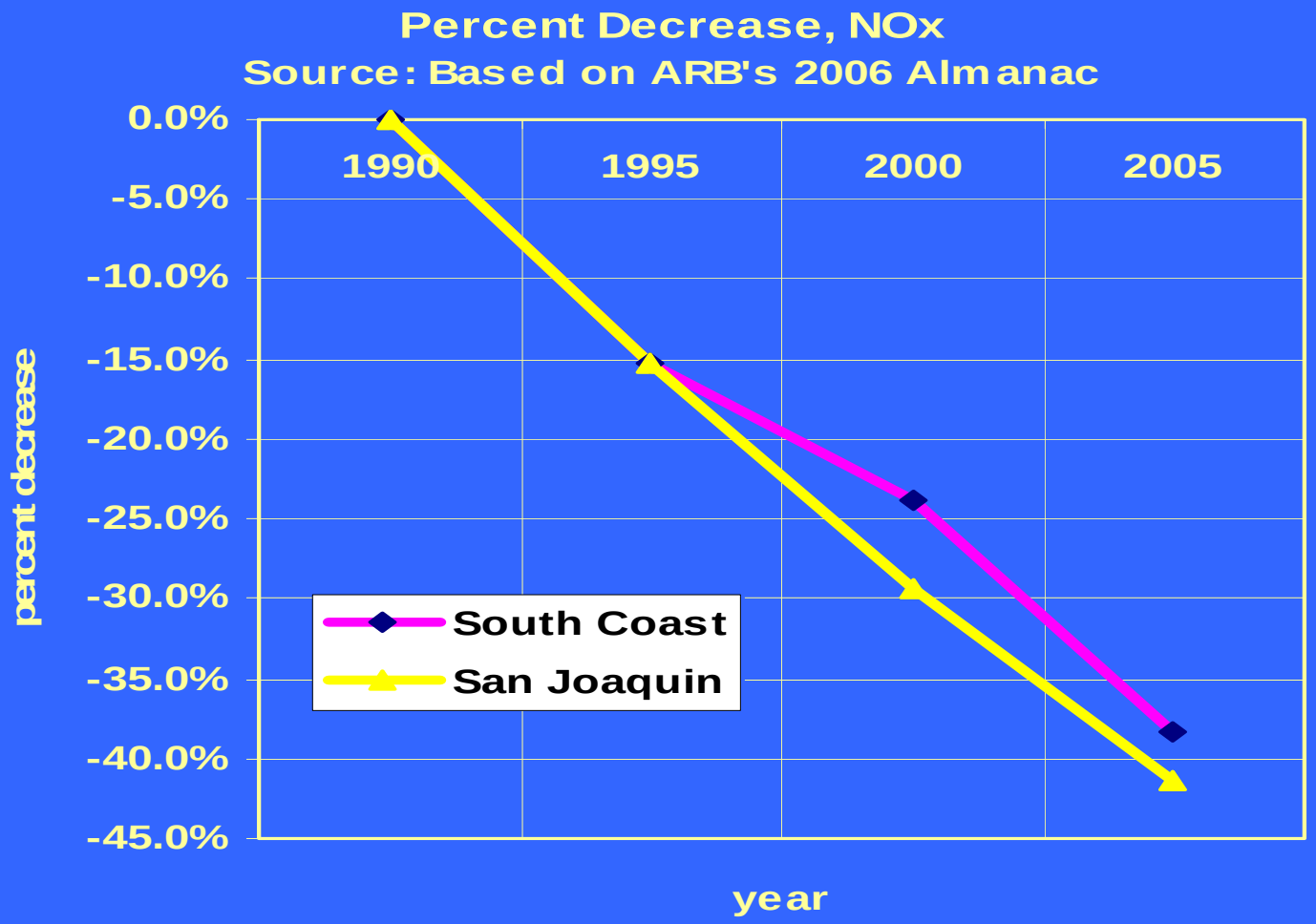
San Joaquin Valley
Air Pollution Control District

- **Valley's challenges are unmatched by any other region in the nation.**
- **Valley's geography and meteorology are ideal for forming and trapping smog.**

Other areas with higher pollution densities do not experience the same degradation in air quality.



Past Efforts to Reduce Air Pollution by Region

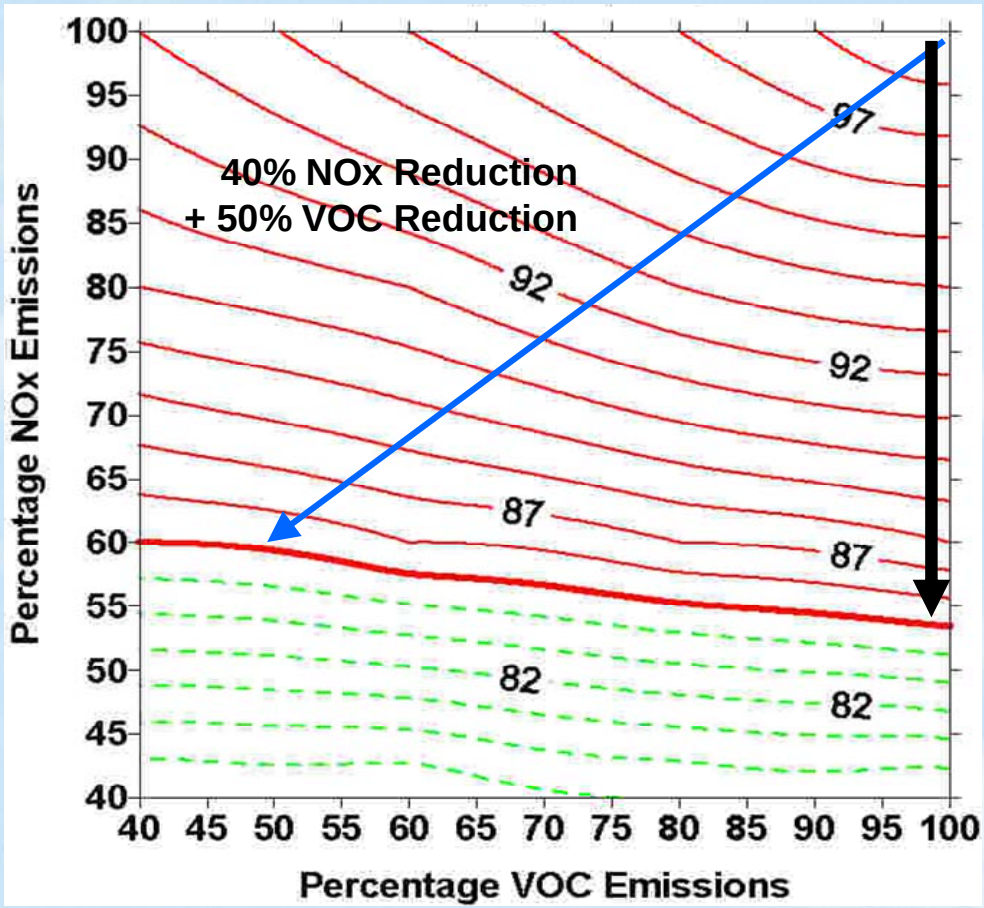


Much progress has been made, but the remaining challenges are daunting

Federal Standards	Pass	Fail	Comments
Ozone: Smog in Summer			
❑ One-hour	N/A		Smog cut by half before standard was revoked
❑ Eight-hour		✓	Plan Adopted 4-30-07
PM-10: Dust, soot in fall			
❑ 24-hour	✓		
❑ Annual	✓		
PM-2.5: smallest particulates in winter			
❑ 24-hour	✓		New standard released 9/21/06.
❑ Annual		✓	EPA Compliance by 2015. Plan due in 2008.

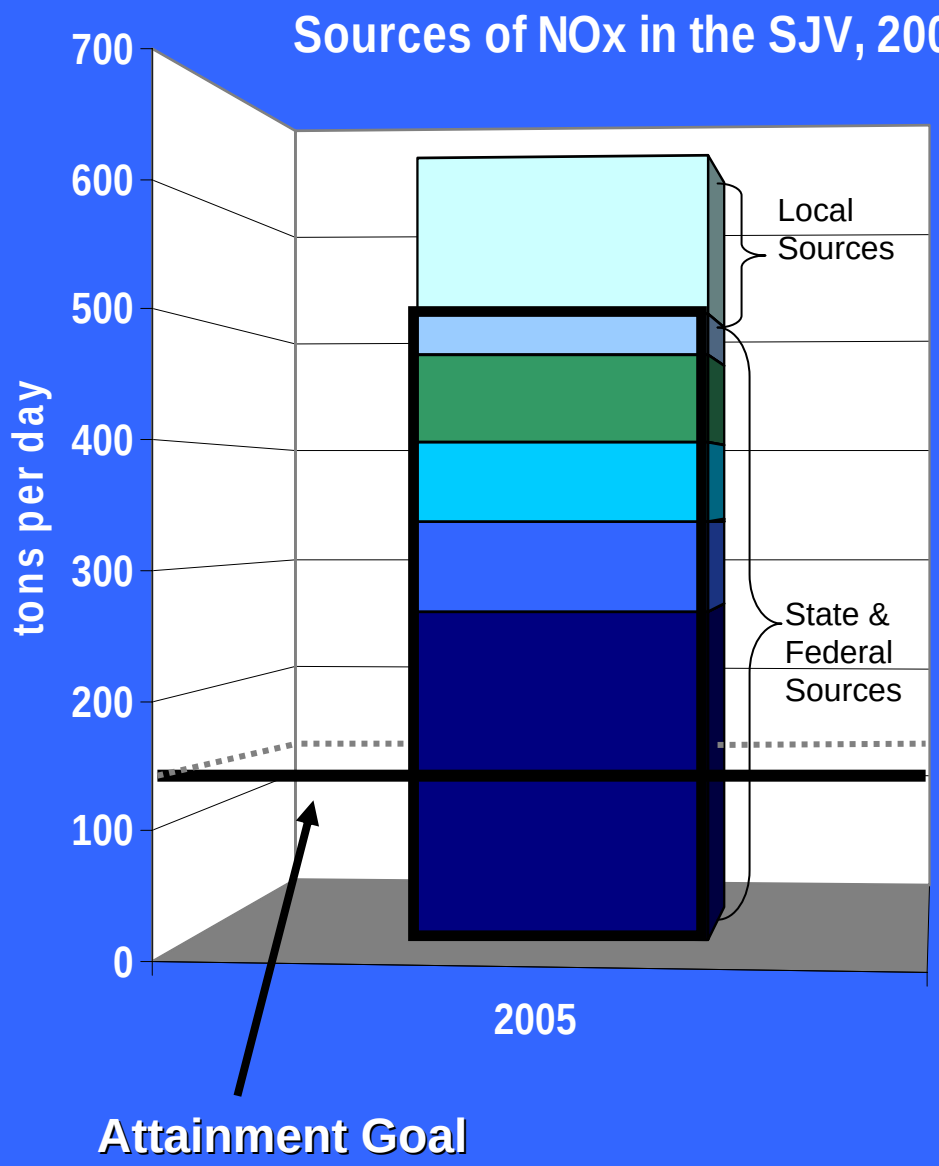
Will VOC Reductions Help?

Ozone Model Response At Arvin Monitor Site to Reductions in 2020 VOC and NOx Emissions



Because of its location, attainment in Arvin needs more Valleywide reductions than all other SJV sites.

Attainment in the San Joaquin Valley is only possible with reductions from State and Federal Sources



- Area and Stationary Sources
- Other off-road mobile (including trains)
- Off-road equipment (construction and mining)
- Farm Equipment
- Passenger cars, light & medium duty trucks, motor cycles, buses and motor homes
- Heavy Duty Trucks

EPA-Constrained Path to Attainment

Tons per Day NOx

	2020	2023
Adjusted Baseline Inventory 2005	624	624
Carrying Capacity	160	160
Reductions Needed	464	464
EPA-creditable Reductions from 3/15/07 District Plan	364	381
Attainment Gap	100	83
	↓	↓
	"Black Box"	"Black Box"
	↓	↓
	"Extreme" 2023	"Extreme" 2023

No Constraints Analysis

NOx	2012	2017	2020	2023	
Reductions Needed	464	464	464	464	
From District Plan	-163	-270	-311	-337	
Additional Needed	301	194	153	127	
Heavy duty trucks	-139	-62	-33	-16	Replace 134,000 trucks
Cars & light trucks	-15	-9	-7	-3	Replace 2.6M cars
Construction/Mining	-36	-24	-19	-16	Upgrade with cleanest tier
Farm Tractors	-24	-15	-10	-5	Upgrade to tier 3, then tier 4
Locomotives	-16	-16	-16	-16	Repower with Tier 3
All Other	-21	-12	-10	-8	
All Reductions	-250	-137	-94	-64	
Shortfall	51	58	59	63	

Agricultural Air Requirements in the San Joaquin Valley

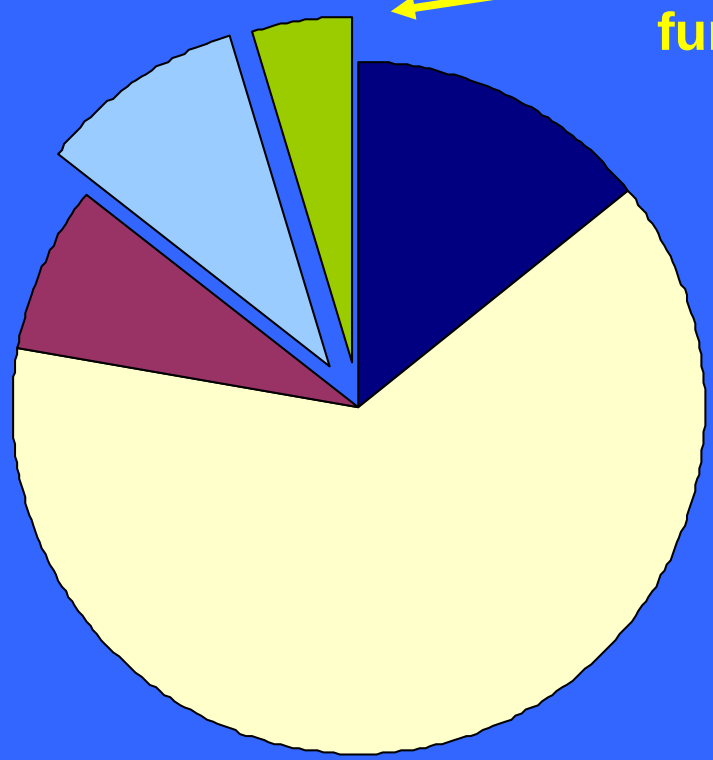
- Historically, agricultural operations were exempt from most air quality regulations in California.
- SB 700 lifted exemption – effective 1/1/2004
  1. Air permits for ½ major source farms/AFOs
  2. Dust control measures, farms > 100 acres, and dairies > 500 mature head
  3. VOC controls for "Large CAFs"
  4. Emissions controls for Ag IC engines
  5. Exempted Ag from "offsets" until reductions are bankable

2007 Ozone Plan

- Due to EPA by June 15, 2007
- Adopted - Public hearing on April 30, 2007
- Developed with extensive public participation
- Today's technology and those on the horizon cannot provide all the reductions we need
- Time extension is necessary ("bump-up") to Extreme
- Calls for another 75% reduction in NOx emissions
- Calls for $3 billion in grant funding ($200 mil/year)
- Will bring the Valley into attainment
  - 50% of the population by 2015
  - 90% of the population by 2020
  - All by 2023

The majority of emissions reductions required for attainment will be achieved through regulations, with incentive funds making up the remainder.

- Local Regulations
- Fleet Turnover
- New State Measures
- Emerging Technologies
- New Incentives



$200 million in incentive funding:

- **$40 million local**
- **$60 million State**
- **$100 million Federal**

2023 Attainment

Dust Control Measures
(Conservation Management Practices)

- District Rule 4550 (CMPs) – Adopted 5/20/2004
- Requires farms/AFOs to implement practices to reduce dust from unpaved roads, equipment yards, land preparation, harvest, and AFO housing and feeding areas.
- Choose options from a checklist.
- CMP Plans due on 12/31/2004
- Largest public outreach in our history
- Collaborative effort involving ag industry representatives, NRCS, and CA RCDs
- Over 6,000 ag sites with approved CMP Plans

Best Available Retrofit Control Technology for Ag IC Engines

- Rule 4702 amended to address ag engines
- Set new emission standards that apply to engines
- Similar standards also adopted by State of CA for diesel engines
- Replace or retrofit engines according to schedule
- Compliance by 2008-2015 (or later) depending on the type and age of existing engine
- Oldest, dirties engines replaced first
- Needs support from State and Federal incentive funding
- Outreach to stakeholders in November 2005, and plans for this summer, 2007

Dairy Air Requirements

- 1,500 dairies in SJV (>2.5 million head)
- Air Permits issued to 500 dairies in SJV covering > 2.1 million head
- Fugitive Dust (CMP) Plans cover > 1,000 dairies
- Air District has 60 pending permit applications for large new and expanding dairies
  - Issued several permits for new/expanding AFOs
  - Required BACT and mitigation
  - Pending litigation

Dairy Air Requirements - Challenges

- Establishing Best Available Control Technology
- Updating the Emission Factors from Dairies
- Health Risk Assessment
- Ambient Air Quality Analysis (PM10 issues)
- CEQA
- Offsets/ERCs
- AB 32 (Greenhouse Gases)
- …Pending and New Research Critical to Addressing These Challenges

SJV Agricultural Research Needs

- Field Activities
  - Effectiveness of existing and new CMPs
- Dairy Emissions
  - Feed
  - Land Application
  - Lagoon Emissions
  - PM10 emissions factors and controls
  - Effectiveness of mitigation practices

Summary

- Tough District regulations and investment from Valley businesses and residents have resulted in monumental progress in improving the Valley's air quality in recent years.
- There are still challenges ahead, and the San Joaquin Valley's challenge in attaining federal air quality standards is unmatched by any other area in the nation
- With cooperation between agencies, communities, industries, and local governments, we can secure the funding we need to reach attainment sooner