



# *Overview*

## **2005 Inventory of Air Emissions Finally!**

**Geraldine Knatz**  
Executive Director  
Port of Los Angeles

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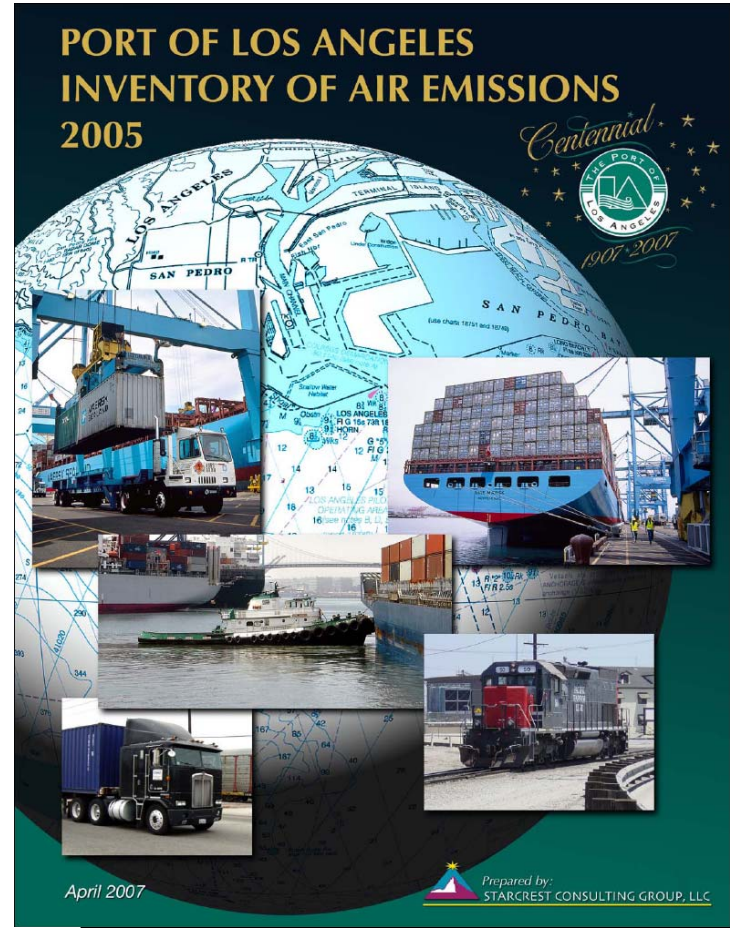
**6 September 2007**





## Topics

- 2005 – What have you people been doing all this time?!
- Cargo Throughput Changes
- Changes between 2005 & 2001
- 2005 Results
- Comparison of 2005 & 2001
- Next Steps





# 2005! What Have You People Been Doing All This Time?!

- Implementing a comprehensive DB – working on automating as much as possible
- Collecting data for 2006 & 2007
- Coordinating w/regulatory agencies
- Validating results & comparing to 2001
- Oh yeah, we were CAAP'd out a bit!!



California Environmental Protection Agency  
 **Air Resources Board**

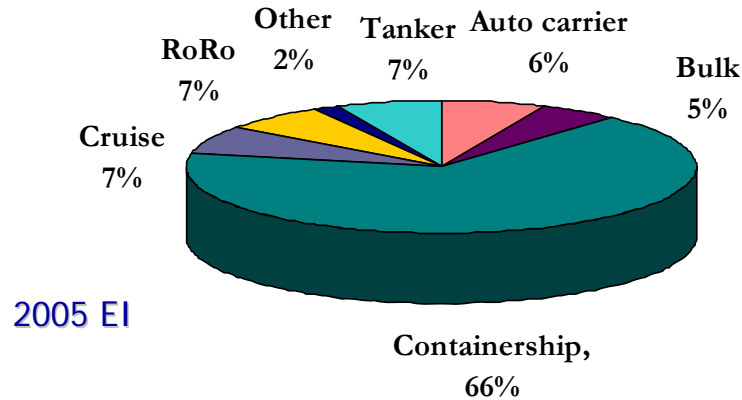




# 2005! What Have You People Been Doing All This Time?!

## Real OGV Data!

### Vessel Boarding Program



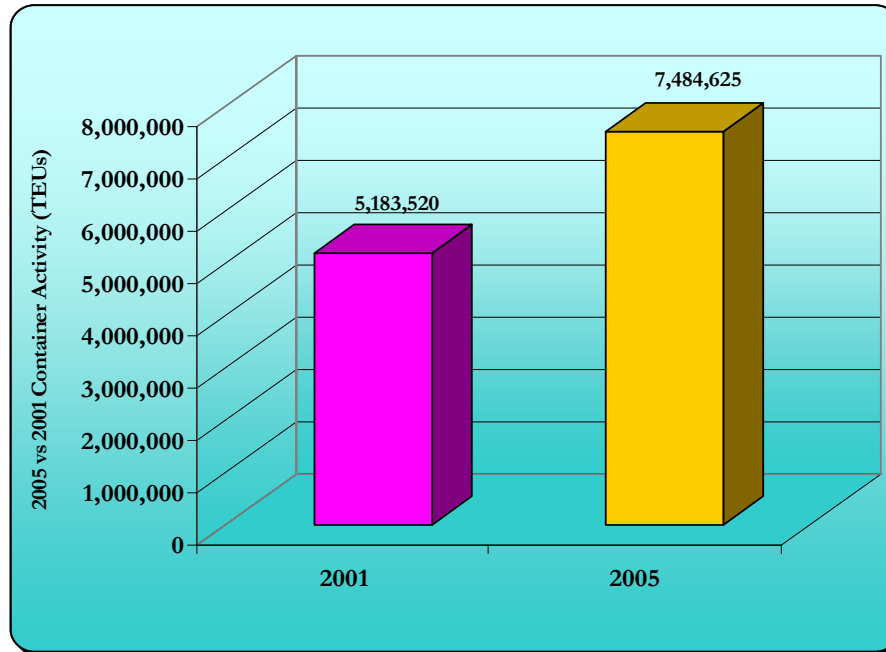
### Total POLA/POLB Boarding Stats

Vessel Count	Program
58	Ports of Long Beach and Los Angeles VBP (2005 – 2006)
80	Vessel Fleet Data Provided (2003-2006)
35	Sister Vessel Specifications Provided
32	Puget Sound Boarding Program (2006)
64	Port of Los Angeles Boarding Program (2001 - 2003)
<b>270</b>	<b>Vessels Total</b>



# Cargo Throughput Changes

## 2001 vs. 2005



Container Throughput  
Up 44%

Container Ship Calls  
Down 10%

### Ship Activity

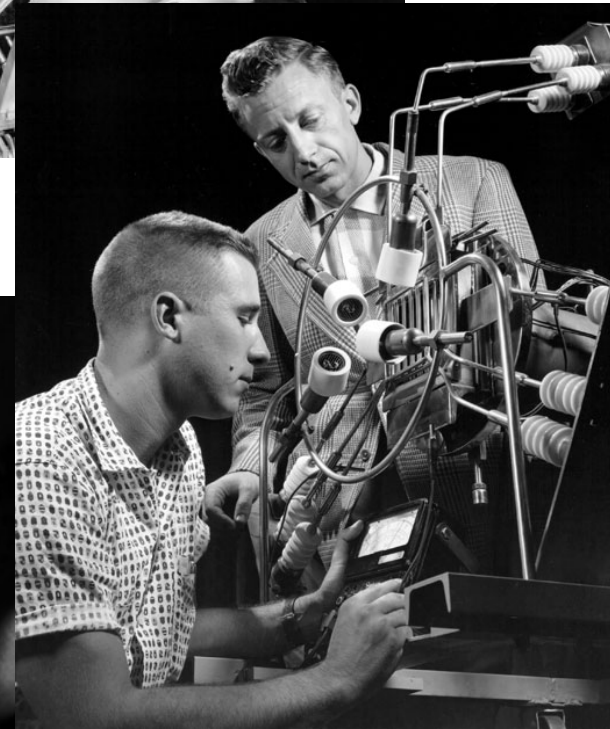
Year	All Calls	Containership Calls	TEUs	Average TEUs/Call
2001	2,717	1,584	5,183,520	3,272
2005	2,341	1,423	7,484,625	5,260



# Changes from 2001 to 2005

## Two Types of Changes

- Changes due to:  
Agency Emission  
Estimating Methods
- Changes Due to:  
Better Data





# Changes from 2001 to 2005

## By Source Category

### HDVs

- EMFAC 2007 used
- Higher level of resolution

### Harbor Craft

- Load factors adjusted to match CARB latest
- Better line haul tug data

### CHE

- New CARB model used
- Adjusted load factors to match new CARB factors

### Rail

- Used new EPA line-haul emission factors
- Off-port line-haul estimating method changed
- Limited scope of rail emissions to those locations under Port influence & control
- We now have full attention of the Class 1 Railroads



# Changes from 2001 to 2005

## Ships

### OGVs

- CARB PM emission factors used
- Emissions estimated per vessel
- More OGV class categories  
(now 25 OGV classes)
- Auxiliary boiler loads updated
- Actual vessel speeds used to 20 nm
- Accounted for fuel switching
- Captured all anchorage activity
- Vessel boarding data used



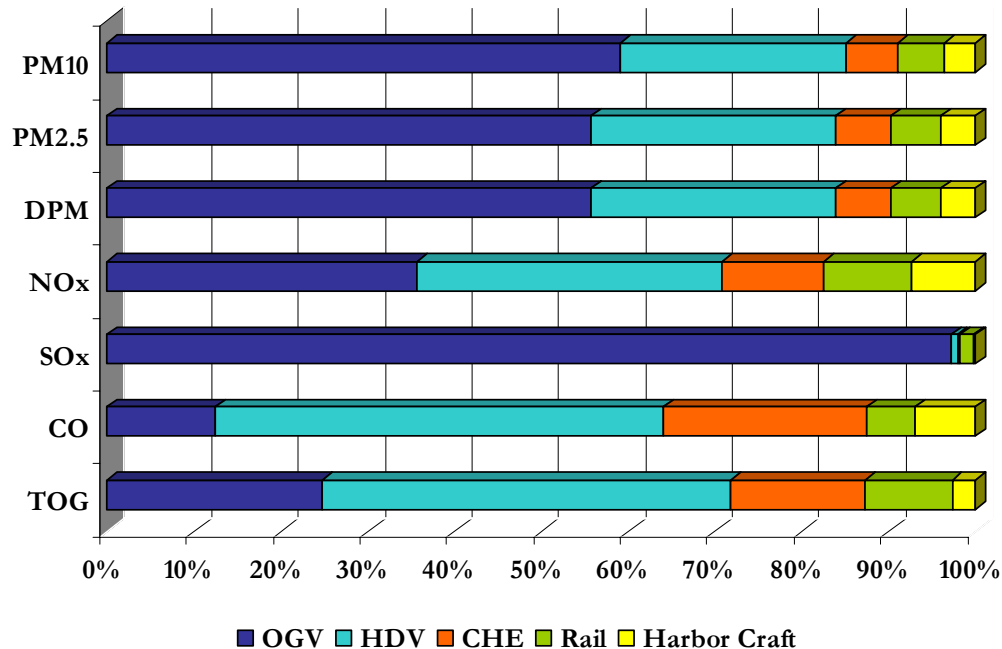


# 2005 Results

## Overview

### Overall Total Emissions Results

Category	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM	NO <sub>x</sub>	SO <sub>x</sub>	CO	TOG
Ocean Going Vessels	634	507	552	6,206	5,609	540	247
Harbor Craft	38	35	38	1,259	7	297	26
Cargo Handling Equipment	63	58	63	2,037	14	1,010	153
Locomotives	57	53	57	1,783	97	244	100
Heavy-Duty Vehicles	280	257	280	6,104	43	2,226	469
<b>Total</b>	<b>1,072</b>	<b>910</b>	<b>990</b>	<b>17,389</b>	<b>5,770</b>	<b>4,318</b>	<b>995</b>



AIR



# How to Compare 2005 to 2001?

## Adjust 2001 to 2005 Methods

- Inventory = Activity Record + Estimating Methodology
- Re-ran 2001 Activity Record using 2005 Methodology
- Important to note: Only ship speeds were changed, no other activity data was changed for the comparison

### Published 2001 vs. Adjusted 2001

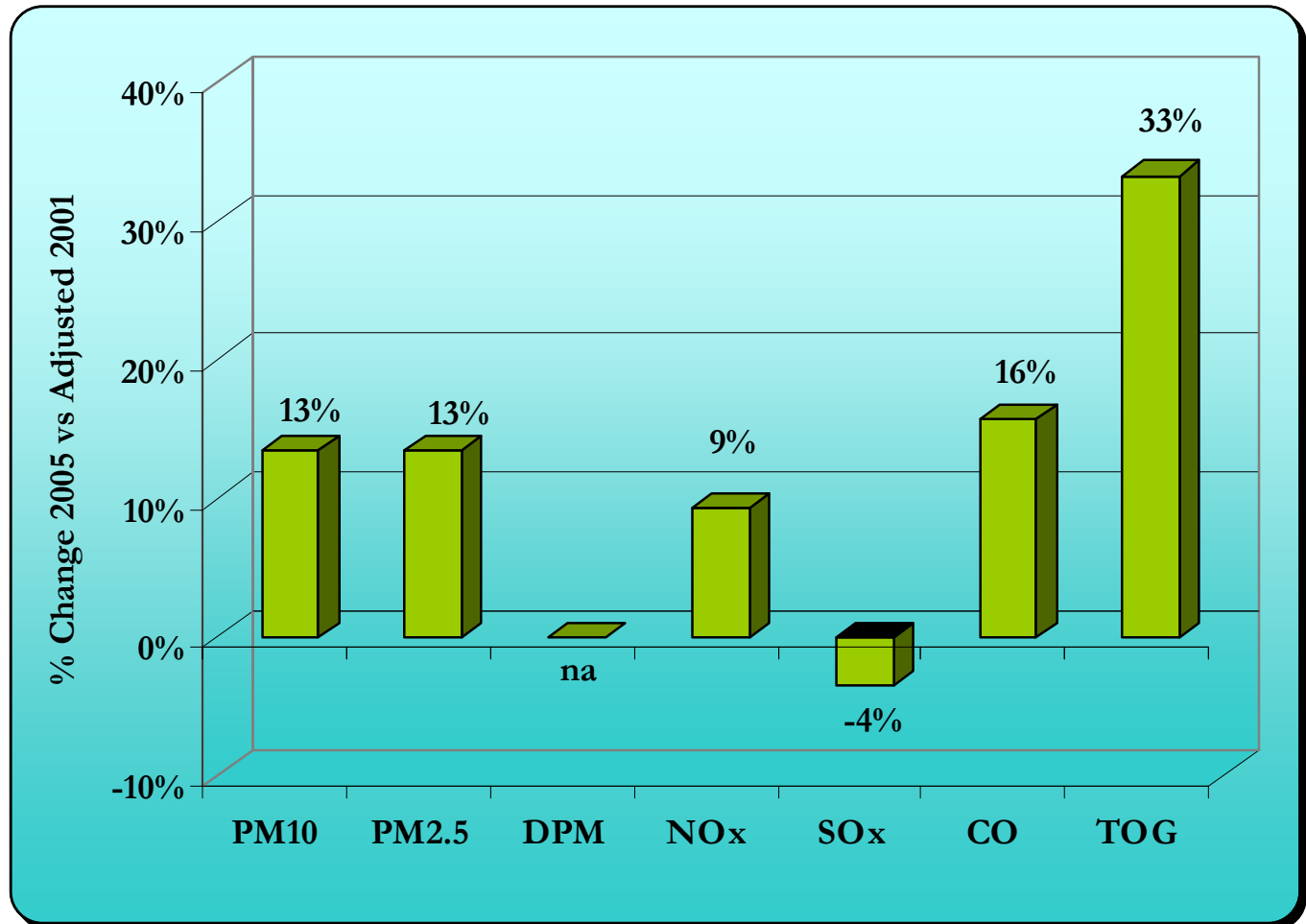
Category	PM <sub>10</sub>	PM <sub>2.5</sub>	DPM	NO <sub>x</sub>	SO <sub>x</sub>	CO	TOG
Published 2001	999	849	na	19,245	4,791	3,967	1,099
Adjusted 2001	945	801	na	15,904	5,985	3,730	747
<b>Change (tpy)</b>	<b>-54</b>	<b>-48</b>	<b>na</b>	<b>-3,341</b>	<b>1,194</b>	<b>-236</b>	<b>-353</b>
<b>Change (%)</b>	<b>-5%</b>	<b>-6%</b>	<b>na</b>	<b>-17%</b>	<b>25%</b>	<b>-6%</b>	<b>-32%</b>



# Comparison 2005 to Adjusted 2001

## Overview

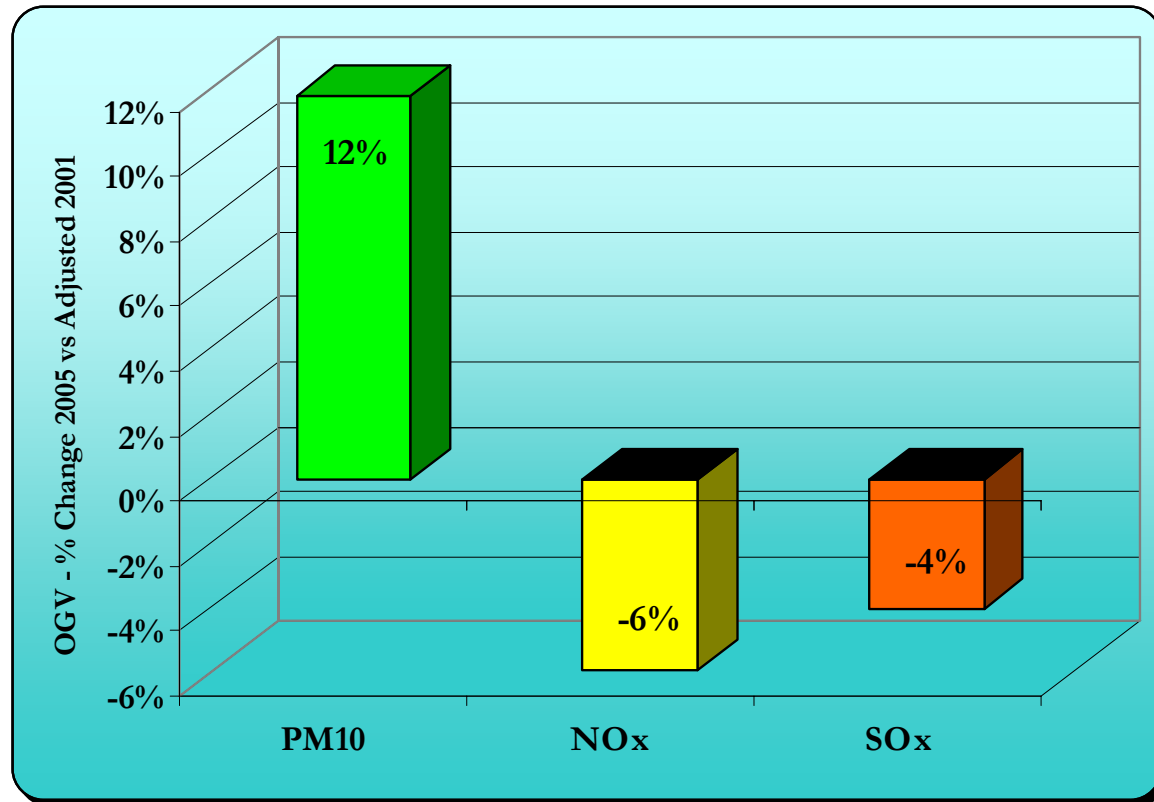
All Source Categories





# Comparison 2005 to Adjusted 2001 By Source Category

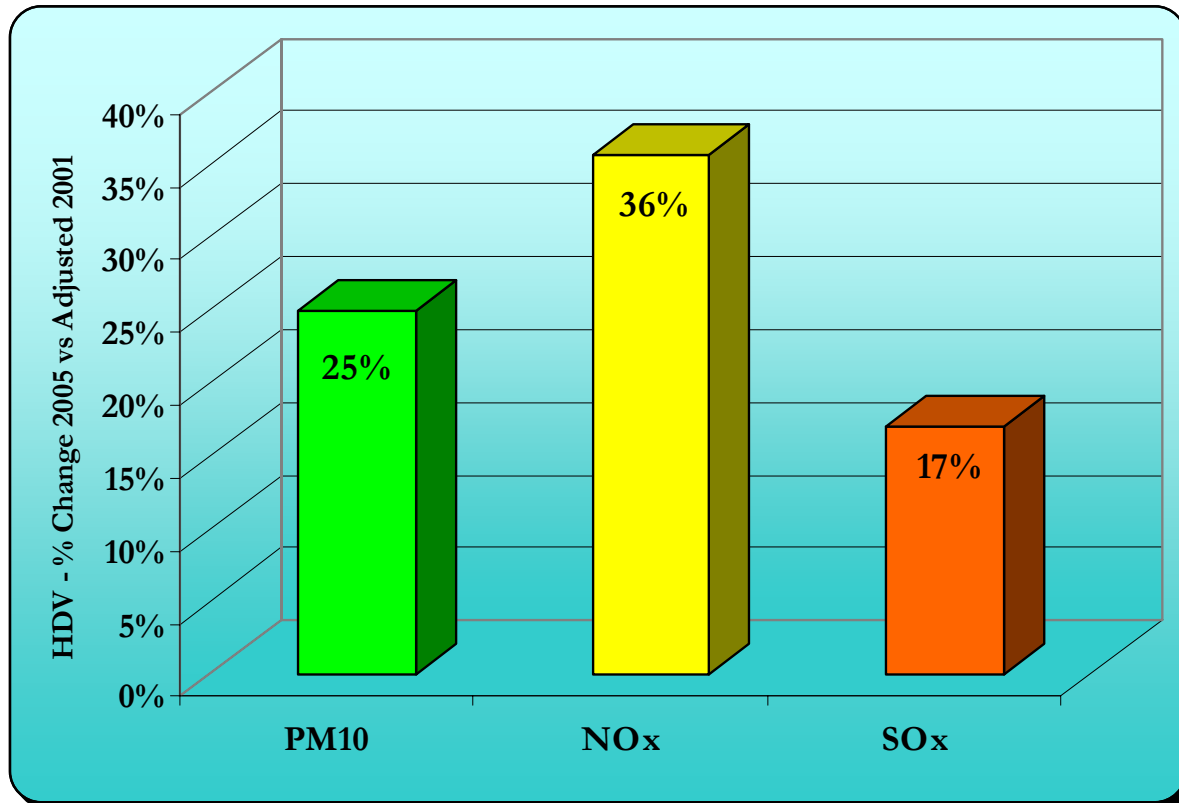
OGVs





# Comparison 2005 to Adjusted 2001 By Source Category

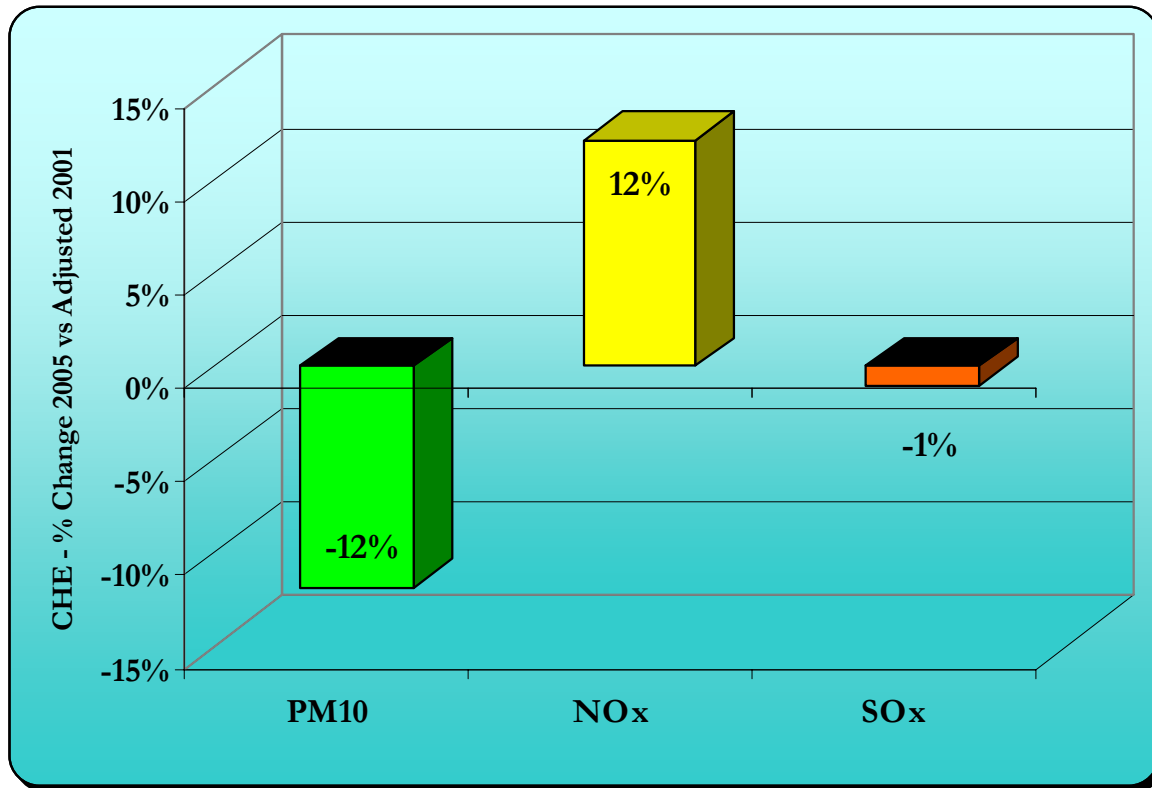
HDVs





# Comparison 2005 to Adjusted 2001 By Source Category

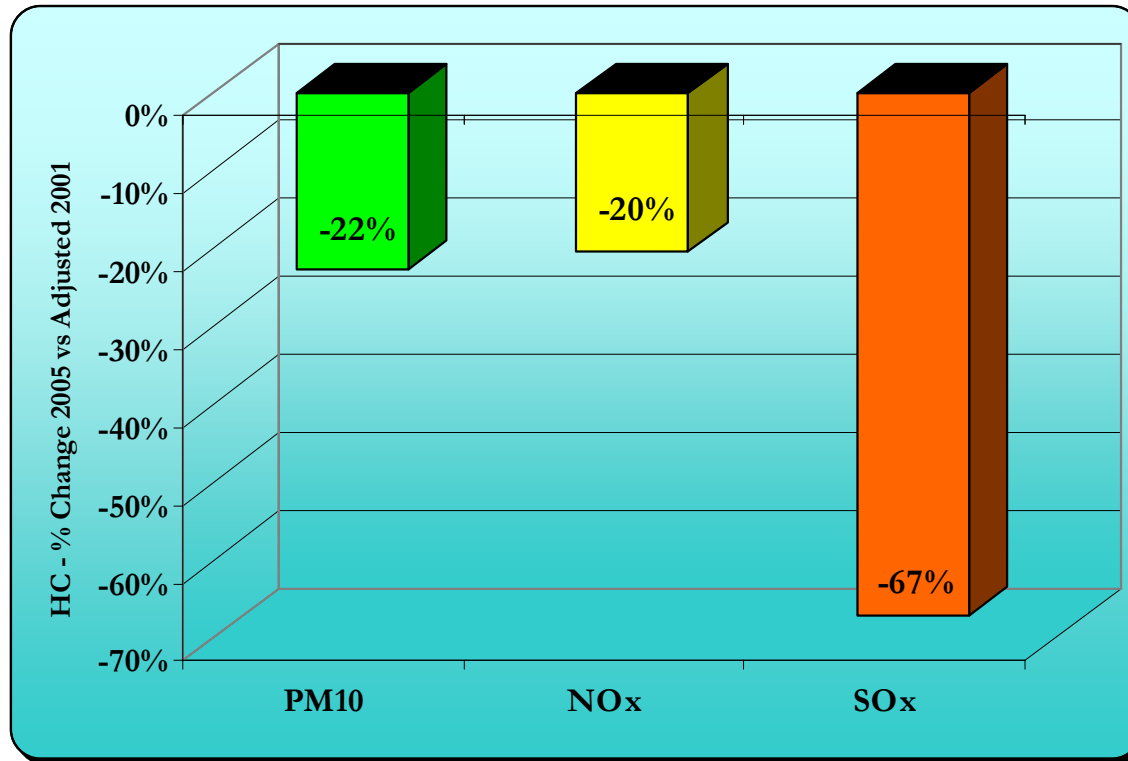
CHE





# Comparison 2005 to Adjusted 2001 By Source Category

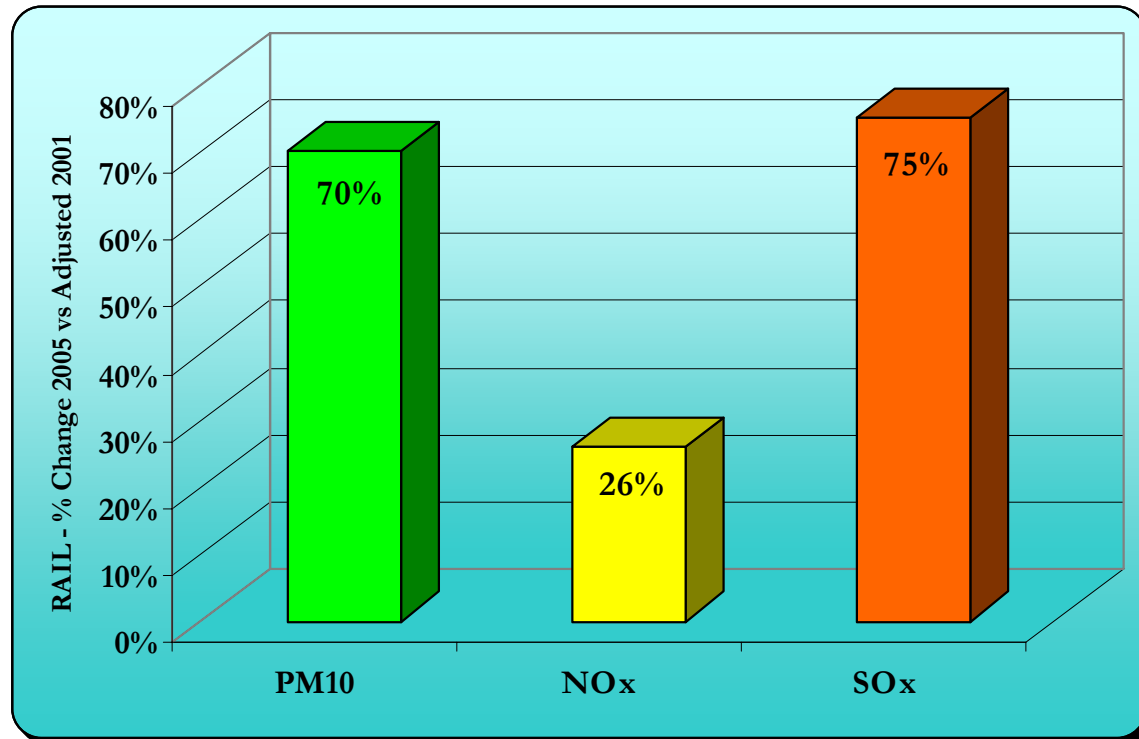
Harbor  
Craft





# Comparison 2005 to Adjusted 2001 By Source Category

RAIL

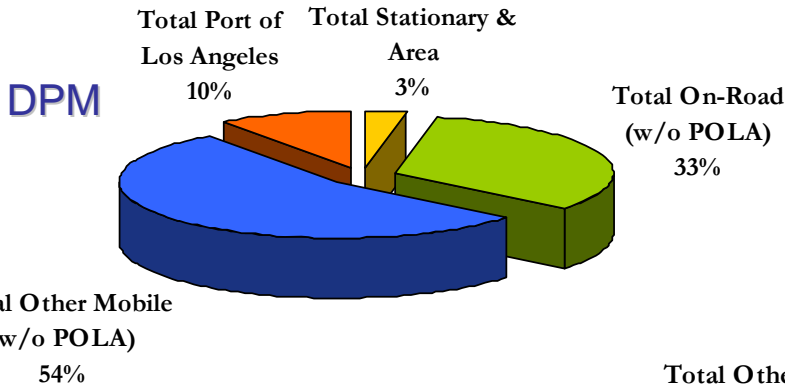




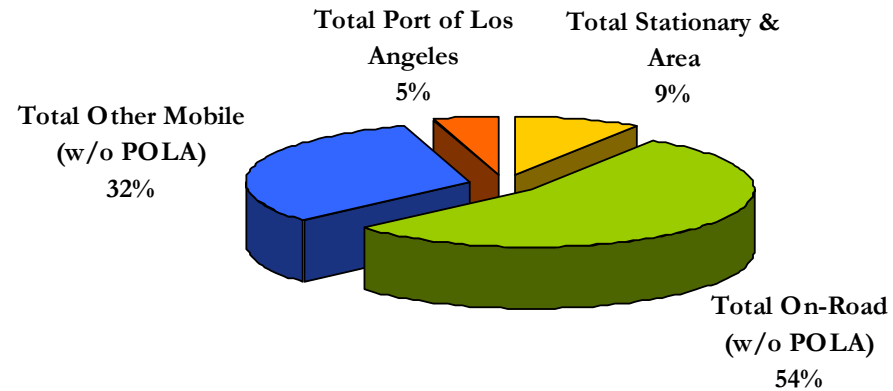
# POLA's Contribution

## 2005 Total Basin Emissions

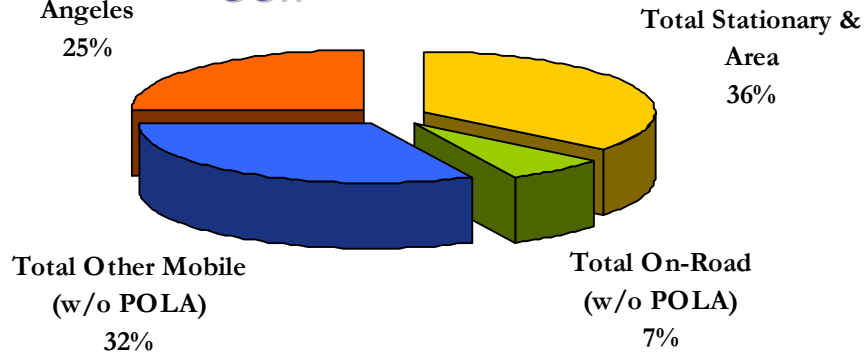
### The Big Picture



**NOx**



**SOx**



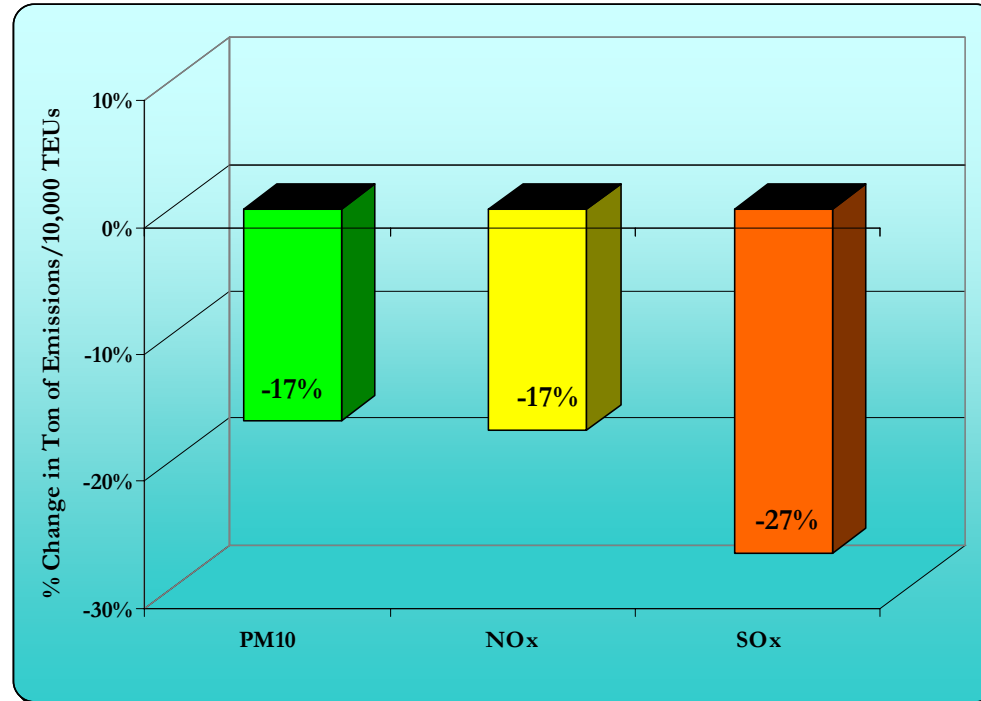


# Emissions Improvement

## Emissions per TEU

In the right direction

Pollutant	Tons of Emissions / 10,000 TEU		Percent Change
	2001	2005	
PM <sub>10</sub>	1.2	1.0	17% decrease
NO <sub>x</sub>	21.2	17.5	17% decrease
SO <sub>x</sub>	5.9	4.3	27% decrease





# Next Steps

- Tenant briefings
- Continue work on 2006 EI
- Coordinate methods w/agencies to ensure harmonization state wide
- Get great rail activity data

