

# Proposed Modifications to the Fleet Rule for Transit Agencies and New Transit Fleet Vehicle Requirements



**Sacramento, California**



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California Environmental Protection Agency



Air Resources Board

# Presentation Outline

- ◆ **Background**
- ◆ **Summary of Proposed Regulation**
- ◆ **Technical Feasibility**
- ◆ **Benefits and Cost Effectiveness**
- ◆ **Conclusions and Recommendation**
- ◆ **Next Steps**

# Health Impacts of Diesels in California

## ◆ Annual health impacts - 2001

- ◆ 2,900 premature deaths
- ◆ 3,600 hospital admissions
- ◆ 240,000 asthma attacks/respiratory symptoms
- ◆ 600,000 lost days of work

## ◆ By comparison - 2001

- ◆ 3,700 deaths from car accidents
- ◆ 2,000 homicides

# Diesel Risk Reduction Plan - In-Use Engine Measures

- ◆ **Transit Fleets - Urban Buses (2000)**
- ◆ **Solid Waste Collection Vehicles (2003)**
- ◆ **Stationary Engines (2004)**
- ◆ **Portable Engines (2004)**
- ◆ **Transit Fleet Vehicles - Proposed Today**
- ◆ **Public HDV Fleets (2005)**
- ◆ **Off-Road Engines (2006)**
  - ◆ **Transportation Refrigeration Units (2004)**
- ◆ **Private HDV Fleets (2007)**

# Adopted Fleet Rule For Transit Agencies

- ◆ **Adopted February 2000**
- ◆ **Applies to Public Transit Agencies**
  - ◆ **New Engine Emission Standards**
  - ◆ **In-Use Fleet Requirements**

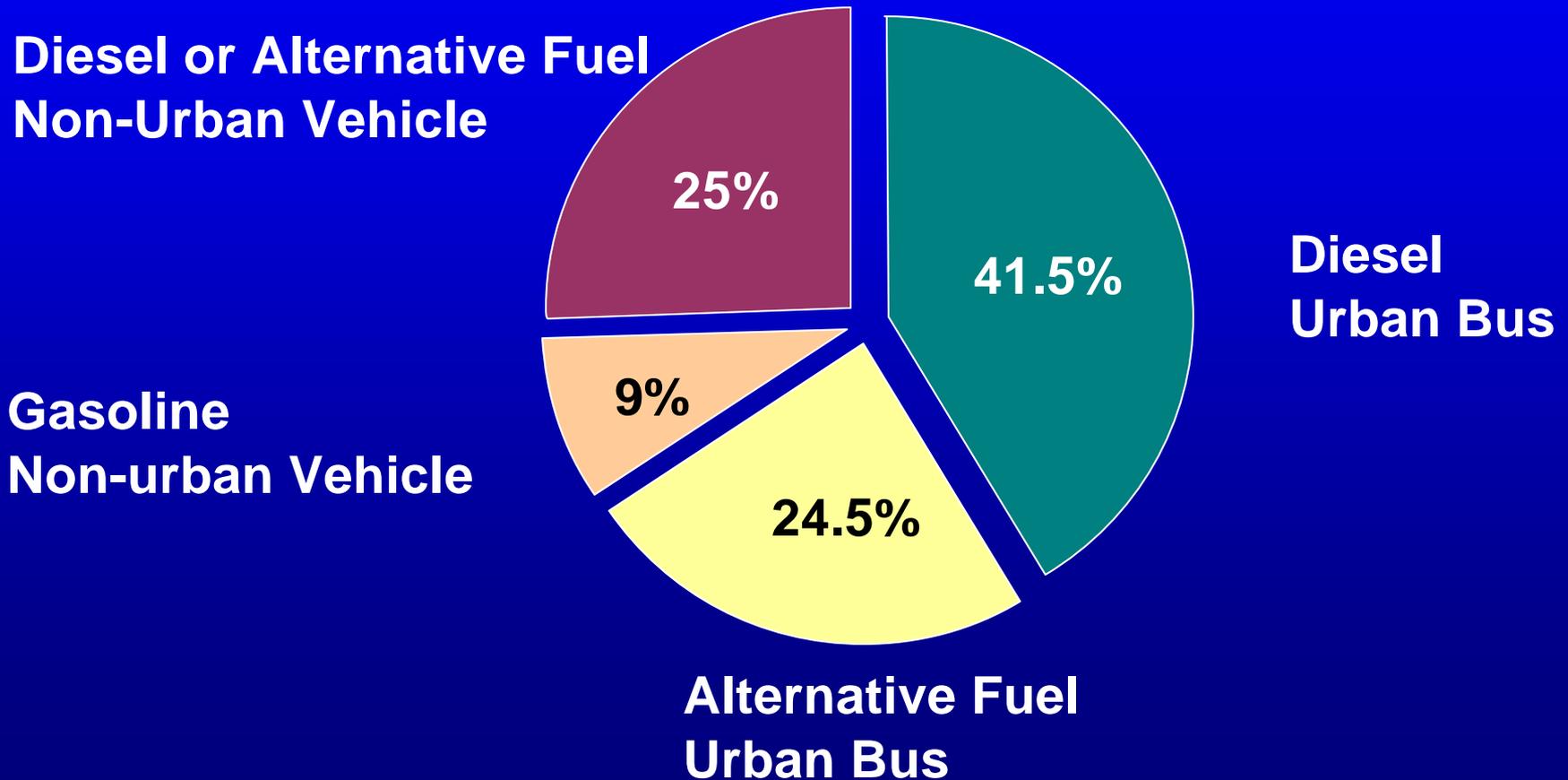
# Adopted Fleet Rule For Transit Agencies

- ◆ **New Engine Emission Standards**
  - ◆ More Stringent than Truck Standards
  - ◆ Urban Buses Required to use Urban Bus Engines
  - ◆ Diesel Hybrid Electric Bus Standard
- ◆ **Zero-Emission Bus Purchases Starting in 2008**

# Adopted Fleet Rule For Transit Agencies

- ◆ **In-Use Fleet Requirements**
  - ◆ **Fuel Path Selection & Purchasing Requirement**
  - ◆ **Ultra Low Sulfur Diesel Fuel Use**
  - ◆ **Maximum Allowable Fleet NOx Average**
  - ◆ **Percentage Reductions of Diesel PM Emissions**

# Not All Transit Vehicles Are Covered by the Fleet Rule



# Transit Fleet Vehicle Requirements

## ◆ In-Use Fleet Requirement

- ◆ Emission Reductions Through Retrofit or Fleet Modernization

## ◆ Not Required

- ◆ Stricter Urban Engine Emission Standard
- ◆ Ultra Low Sulfur Diesel
- ◆ Path Selection or Purchasing Requirements

# Transit Fleet Vehicle Requirements Scope



Commuter  
Paratransit



Medium Bus  
28' to 32'



Small Bus



# Transit Fleet Vehicle Requirements In-Use Fleet Emission Reduction

- ◆ Maximum Allowable NOx Fleet Average
- ◆ Percentage Reduction in PM Emissions
- ◆ Two-Phase Implementation
  - ◆ 2007
  - ◆ 2010

# Current Maximum NOx Fleet Average Requirement

Fleet Type	Compliance Date		
	10/01/02	12/31/07	12/31/10
Urban Bus	4.8*		

\* in g/bhp-hr

# Proposed Maximum NOx Fleet Average Requirement

Fleet Type	Compliance Date		
	10/01/02	12/31/07	12/31/10
Urban Bus	4.8*		
Transit Fleet Vehicles		3.2*	2.5*

\* in g/bhp-hr

# Current Percentage Diesel PM Reduction

Fleet Type	Baseline	% Reduction From Baseline				
	Year	2004	2005	2007	2009	2010
Urban Bus						
Alternative	2002	20	40	60	85	
Diesel	2002	40	60	85		

# Proposed Percentage Diesel PM Reduction

Fleet Type	Baseline	% Reduction From Baseline				
	Year	2004	2005	2007	2009	2010
Urban Bus						
Alternative	2002	20	40	60	85*	
Diesel	2002	40	60	85*		
TFV	2005			40		80*

\*In the final year of compliance and beyond the transit agency can meet a fleet average of 0.01 g/bhp-hr times the number of vehicles in the fleet.

# Clarifying Changes

- ◆ Commuter Service Bus Definition
- ◆ “Newly Formed” Transit Agency
- ◆ Diesel HEB Standards
- ◆ Relocation of In-Use Requirements

# Clarifying Changes Commuter Service Bus

“Commuter  
Service  
Bus”



# Other Clarifying Changes

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- ◆ “Newly Formed” Transit Agency
- ◆ Add NMHC and CO Diesel HEB Standards
- ◆ Relocation of In-Use Requirements

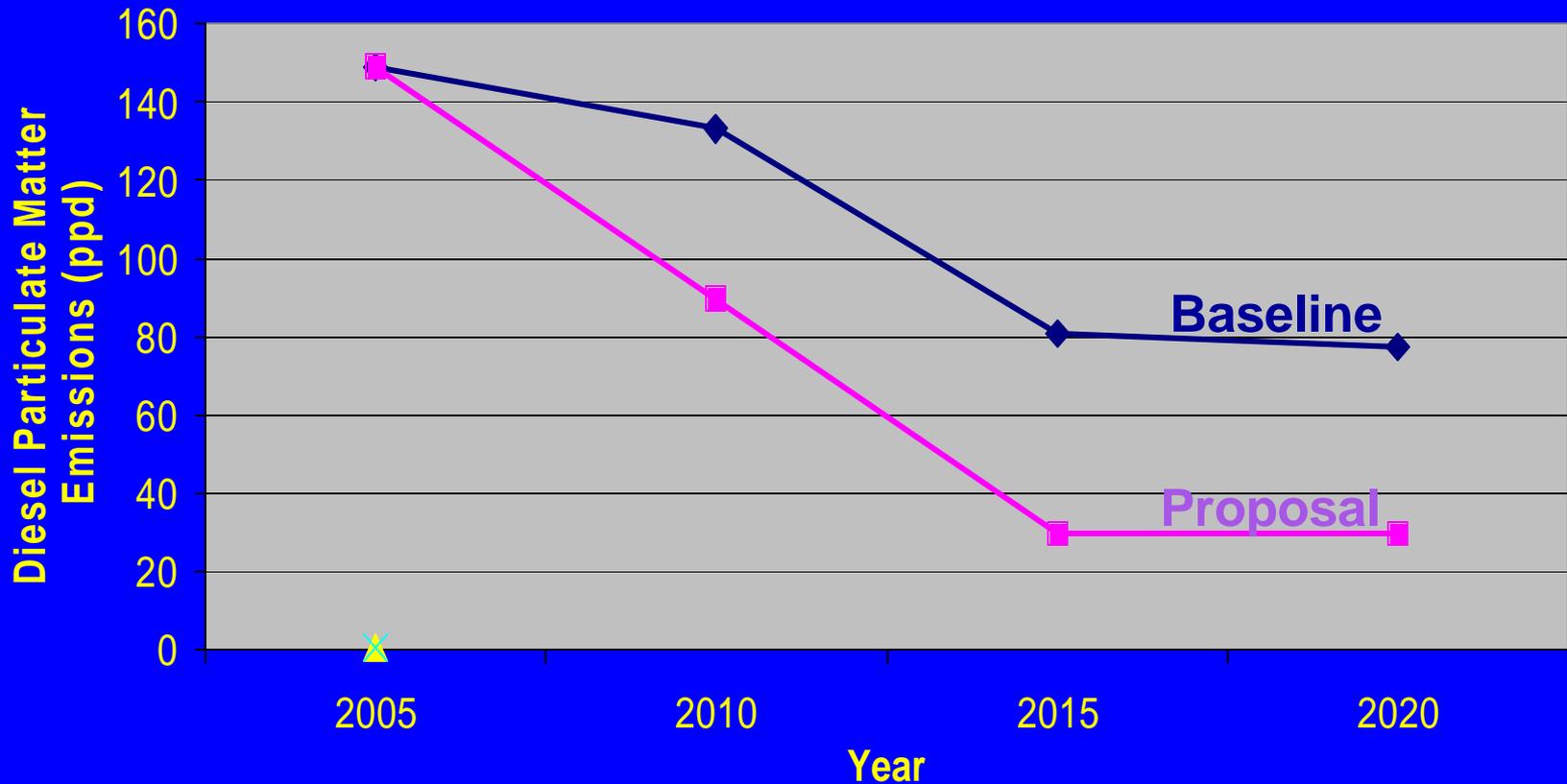
# Technical Feasibility

- ◆ Experience with Current Rule
  - ◆ Diesel Particulate Filters: approximately 1100 installed on California Urban Buses
- ◆ For Transit Fleet Vehicles
  - ◆ Retrofit with Verified Diesel Control Systems
  - ◆ Repower Engines
  - ◆ Replace Vehicles

# Benefits

## PM Emission Reductions

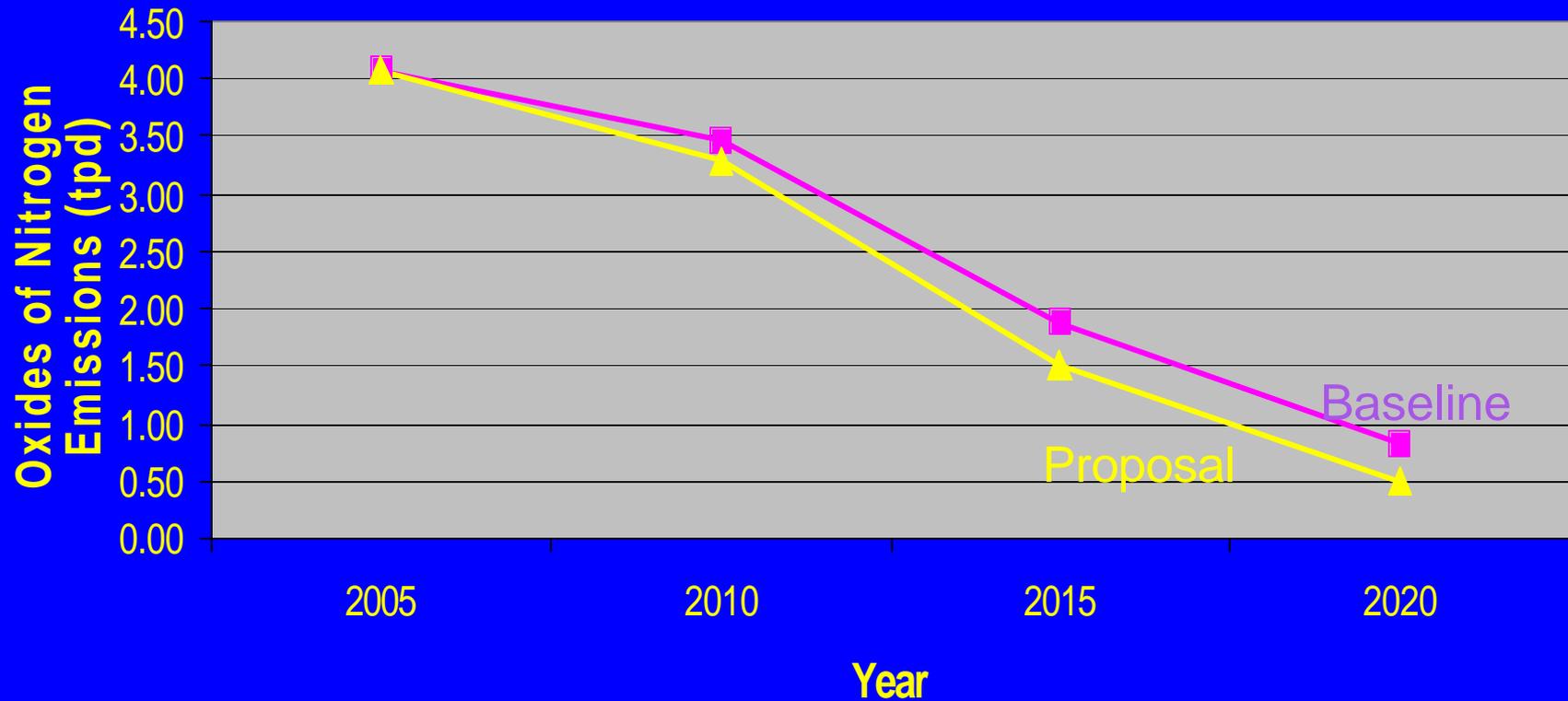
Transit Fleet Vehicle PM Emission Reductions



# Benefits

## NOx Emission Reductions

Transit Fleet Vehicle NOx Emission Reductions



# Cost

- ◆ **Total Cost To Transit Agencies**
  - ◆ \$18.7 million Over 14 Years
  - ◆ Most Expenditures in Next Five Years

# Cost-Effectiveness

## ◆ Cost-Effectiveness

- ◆ \$65 per Pound Diesel PM Reduced
- ◆ \$1.40 per Pound NOx Reduced
- ◆ \$1.5 to 2 million per Death Avoided

## ◆ This is a Cost-Effective Method of Reducing PM and NOx

# Staff Recommendations

- ◆ Adopt In-Use Fleet Requirements for Transit Fleet Vehicles
- ◆ Adopt Clarifying Changes to the Existing Requirements
- ◆ Proposal is Consistent with the Diesel Risk Reduction Plan

# Next Steps

## ◆ July 2005

- ◆ Revisit the 2007 Urban Bus Standards
- ◆ Bring Proposals for Four SCAQMD Fleet Rules
  - ◆ Transit Agencies
  - ◆ Refuse Haulers
  - ◆ Street Sweepers
  - ◆ School Buses