



**F**leet  
**I**nformation  
**R**egistry  
**S**trategy &  
**T**racking

# **CARB Diesel Regulations: Overview and Observations**

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# ***Presentation Overview***



- Chronology for multiple California diesel rules
- Focus on trucks and offroad equipment
- Discuss funding plan
- Answer your questions
- Be an ongoing resource to this team effort

## ***Company Overview***

- Twice selected by CARB to train regulated businesses throughout US, Canada and Mexico
- Regulatory specialists serving over 300 diesel fleet owners
- Selected by statewide trade associations as their advisor and liaison to CARB
- Sixteen years experience with CARB regulations and 25 years with CalEPA

# California is a “Nation-State”

## Statistics

- 37 million residents
- Ranks as the 6<sup>th</sup> or 7<sup>th</sup> largest economy globally
- About 25% of domestic logistics revenue touches the state
- Over 1 million diesel vehicles
- Over 300,000 nonroad engines (construction, portable and material handling)
- \$122 billion state budget adopted this month (\$500M low carbon trans)



# Cities in the U.S. with the Most Polluted Air



## Particulate Matter (PM)

- 1: Fresno-Madera, CA
- 2: Bakersfield, CA
- 3: Visalia-Porterville-Hanford, CA
- 4: Modesto-Merced, CA
- 5: Los Angeles-Long Beach, CA
- 6: El Centro, CA
- 7: San Jose-San Francisco-Oakland, CA
- 8: Cincinnati-Wilmington-Maysville, OH-KY-IN
- 9: Pittsburgh-New Castle-Weirton, PA-OH-WV
- 10: Cleveland-Akron-Canton, OH

## OZONE (Smog)

- 1: Los Angeles-Long Beach, CA
- 2: Visalia-Porterville-Hanford, CA
- 3: Bakersfield, CA
- 4: Fresno-Madera, CA
- 5: Sacramento-Roseville, CA
- 6: Houston-The Woodlands, TX
- 7: Dallas-Fort Worth, TX-OK
- 8: Modesto-Merced, CA
- 9: Las Vegas-Henderson, NV-AZ
- 10: Phoenix-Mesa-Scottsdale, AZ

# CARB Diesel Regulations



- Smoke/Tampering (1988)
- Periodic Smoke Insp (1999)
- Urban Buses (2000)
- Garbage Trucks (2003)
- School Bus Idling (2003)
- Stationary Engines (2004)
- TRUs (2004)
- Commercial Idling (2004)
- Portable Engines (2004)
- Transit Fleet Vehicles (2005)
- Public Fleet & Utilities (2005)
- Cargo Handling Equipment (2005)
- Port Trucks (2007)
- **Off-Road Vehicles (2007)**
- Tractor-Trailer GHG (2008)
- **Truck and Bus Regulation (2008)**
- Off-Road Agricultural Vehicles  
(*Incentive based*)



## ***Ideal Regulatory Approach***



- Step 1—PLAN: Know what reductions are desired, what pilot projects can demonstrate technology that works, find way to pay for it
- Step 2—DO: Design implementation schedule that is achievable
- Step 3—CHECK: Establish what to measure and how to measure it to gauge effectiveness
- Step 4—ADJUST: Make adjustments transparent and based on the best data available

# ***CARB Off-Road Regulations: Off-road Diesel Vehicles***



- ***Regulatory Definition:*** “diesel fueled or alternative diesel fueled off-road compression ignition vehicle engine with maximum power of 25 horsepower (hp) or greater that is used to provide motive power in a workover rig or to provide motive power in any other motor vehicle that (1) cannot be registered and driven safely on-road or was not designed to be driven on-road, and (2) is not an implement of husbandry or recreational off-highway vehicle.
- ***What’s out:*** “vehicles that were designed to be driven on-road, and have on-road engines are considered on-road and are specifically excluded from this regulation.”

# Off-road Rule Overview



- At rule adoption there were estimated approximately 120,000 diesel engines in the state that are in self-propelled equipment that is 25hp or greater
- 2014-2028 implementation schedule
- Size: Large, medium and small fleets have staggered schedules for compliance
- The rule forces turnover at a fixed percentage per year or meeting a declining fleet average

# ***Offroad Compliance Process: Adjusted***



- Prior to the December 2010 hearing, 20% of the horsepower per year required particulate matter reductions
- A four year delay took the first large compliance date to January 1, 2014
- There was an early action double filter credit
- The annual compliance percentage dropped to 5-10% per year from 2014 to 2028
- Changes reported to CARB within 30 days, and annual certification and labeling required

# Compliance Options



**Option 1: Fleet Average (Calculator by CARB Staff), or**

**Option 2: Turnover, NO<sub>x</sub> or PM VDECS**

- The required turnover percentages of fleet horsepower to turn over, apply NO<sub>x</sub> VDECS, or apply the highest level PM VDECS

**Large fleets –**

2014: 4.8 percent

2015 to 2017: 8 percent

2018 to 2023: 10 percent

**Medium fleets –**

2017: 8 percent

2018 to 2023: 10 percent

**Small fleets –**

2019 to 2028: 10 percent

# ***Safety of Retrofits***



- The CARB Offroad rule has provisions for a discretionary review by the CARB Executive Officer relating to safety.
- A Petition (Petition File No. 507) was brought by Associated General Contractors of California and the Operating Engineers Local 3
- The OSHA OCCUPATIONAL SAFETY AND HEALTH STANDARDS BOARD, the Board amended Title 8, Construction Safety Orders, Sections 1590(d), 1591(b), and 1597, regarding exhaust and modifications of equipment.
- Summary: retrofits are not required where the installation would impact the safe operation of equipment

## ***Offroad Rule: What have we learned***

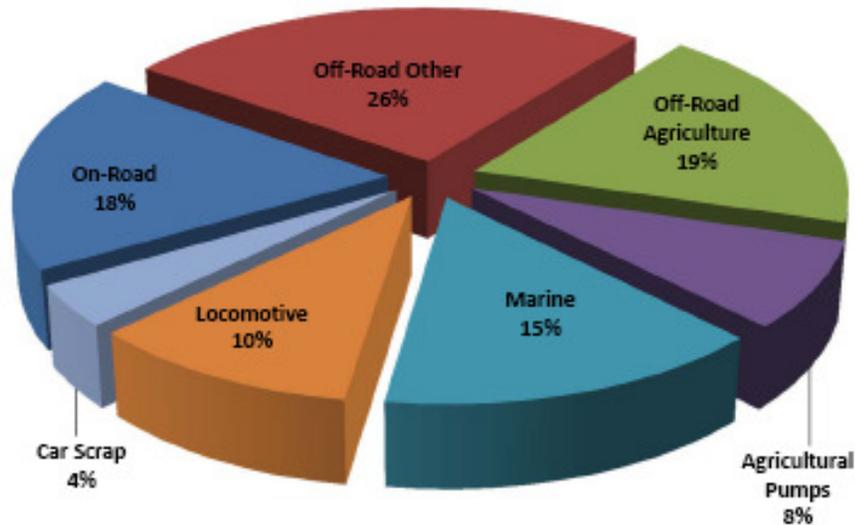


- Accurate emissions inventory is key to success
- Adjusting the implementation schedule was needed (bad inventory and bad economy)
- The economy governs how quickly fleet owners turnover their equipment
- Early incentives have been a key component to rolling out cleaner equipment

# Offroad Funding: Carl Moyer Program



Historic Funding by Source Category Group  
Since FY 2005-06



Program began in 1998

- About \$1 billion allocated to date
- Currently authorized at \$69 million per year
- Early or extra NO<sub>x</sub>, PM, ROG reductions
- CARB provides guidance and oversight
- Air Districts administer funds, select projects

# CARB Onroad (Truck & Bus Regulation)



Air Resources Regulatory Experts



- **Regulatory Definition:** “Affected vehicles are those that operate on diesel-fuel, dual-fuel, or alternative diesel-fuel that are registered to be driven on public highways, were originally designed to be driven on public highways whether or not they are registered, yard trucks with on-road engines or yard trucks with off-road engines used for agricultural operations, both engines of two-engine sweepers, schoolbuses, and have a manufacturer’s gross vehicle weight rating (GVWR) greater than 14,000 pounds (lbs).”
- **Includes:** All Class 4 and heavier diesel vehicles
- **Does Not Include:** Two engine cranes, two engine concrete pumps and trucks regulated under prior truck regulations

## *Trucks Emissions Inventory*

CARB's estimates:

- 26% of Statewide Diesel PM
- 33% of Statewide NO<sub>x</sub>
- 8% of Statewide GHG &  
21% of Transportation GHG

# Weight Classes



Weight Class	Minimum GVWR (lbs)	Maximum GVWR (lbs)	VIUS * Category	Common Category
Class 1		6,000	Light-duty	Light Duty
Class 2	6,001	10,000	Light-duty	Light Duty
Class 3	10,001	14,000	Medium-duty	Light Duty
Class 4	14,001	16,000	Medium-duty	Medium Duty
Class 5	16,001	19,500	Medium-duty	Medium Duty
Class 6	19,501	26,000	Light-heavy	Medium Duty
Class 7	26,001	33,000	Heavy-heavy	Heavy Duty
Class 8	33,001		Heavy-heavy	Heavy Duty

\* VIUS: US DOT Vehicle Inventory and Use Survey



**201**



# ***Engine Technology by 2023***

- What is 2010 MY Engine Technology?
  - Cleanest for PM & NO<sub>x</sub>
  
- Why 2010 Engine Technology?
  - PM is a toxic air contaminant
  - NO<sub>x</sub> contributes to ozone



**2010 Engine Technology by  
2023**

**Light**



**Heavy**



# Compliance Schedules



Schedule for Lighter Trucks and Buses	
Engine Year	2010 MY Engine
1995 and older	January 1, 2015
1996	January 1, 2016
1997	January 1, 2017
1998	January 1, 2018
1999	January 1, 2019
2003 and older	January 1, 2020
2004-2006	January 1, 2021
2007-2009	January 1, 2023

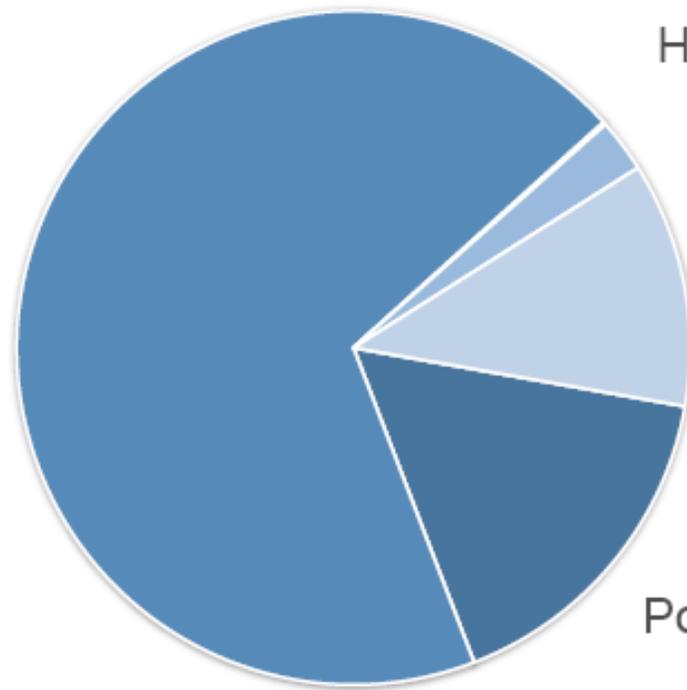
Schedule for Heavier Trucks and Buses		
Engine Year	PM Filter	2010 MY Engine
Pre-1994	Not required	January 1, 2015
1994-1995	Not required	January 1, 2016
1996-1999	January 1, 2012	January 1, 2020
2000-2004	January 1, 2013	January 1, 2021
2005 or newer	January 1, 2014	January 1, 2022
2007-2009	Already equipped	January 1, 2023

# Onroad Funding: State Bond (Prop 1B)



## Program Funding to Date

Heavy Duty Trucks \$518M



Harbor Craft \$1M

Locomotives \$19M

Ships at Berth and Cargo Handling Equipment \$84M

Port/rail yard trucks \$118M

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***\$220 million remaining***

# Policy Drivers for Investments



Climate  
Change



Criteria  
Pollutants



Toxics  
Exposure



# Policy Drivers for Investments



Climate  
Change



Criteria  
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Toxics  
Exposure



# Onroad Funding Approved (2016-17)



## Proposed Low Carbon Transportation and Fuels Allocations

\$280M	Light-duty vehicle investments (SB 1275) <ul style="list-style-type: none"><li>- CVRP</li><li>- Equity projects</li></ul>
\$175M	Heavy-duty vehicles and equipment (SB 1204) <ul style="list-style-type: none"><li>- Advanced technology demonstrations</li><li>- Pilot deployment of zero-emission trucks, buses, equipment</li><li>- Deployment vouchers for trucks, buses, low NOx engines</li></ul>
\$40M	Very low carbon fuels production
\$5M	State operations
<b>\$500M</b>	<b>TOTAL</b>

# Comments on Committee's Tasks



- Step 1—PLAN: California struggled to get good inventory data but allocated billions for early emissions reductions
- Step 2—DO: Find industries where technology will work and do a schedule that is achievable
- Step 3—CHECK: Ongoing support, staffing, data collection and cooperation is needed to report on effectiveness of any program
- Step 4—ADJUST: Once you decide on an approach, make adjustments transparent and based on the best data available

# ***Questions & Answers***



# ***Contact Information***

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