PUBLIC CONSULTATION MEETING TO DISCUSS

In-Use and New Stationary Diesel-Fueled Engines Emission Inventory

August 26, 2003

California Environmental Protection Agency

Air Resources Board

Background

- Stationary Diesel ATCM requires accurate engine population and emissions estimates
- Require engine population by equipment type, horsepower class, and geographic region
- Inventory previously estimated by districts
  - incomplete (not all districts estimate)
  - inconsistent (different methodologies)

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Inventory Development Process

- ARB Interdivisional team (PTSD and SSD) with local air district assistance
- Numerous data sources reviewed and reconciled
  - ARB OFFROAD Model
  - ARB CEIDARS database
  - Power Systems Research (PSR) database
  - District permit files and surveys
  - CEC BUG database
- District review through EITAC
- Approach consistent with USEPA NONROAD and NESCAUM
- Update inventory as new information available

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Inventory Needs

- Equipment Types
  - Generators
  - Pumps
  - Other (rock crushers, cranes, grinders, compressors)
  - Irrigation Pumps
- Uses
  - Prime vs. Backup
  - Agricultural vs. Commercial (non-agricultural)
- Horsepower class
  - 50-3000 horsepower
- Year
  - 2002, 2010, 2020 (existing regulations and ATCM impacts)

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Approach

- Emissions = Pop * EF * HP * LF *Act
  - Where:
    - Pop = Engine Population
    - EF = Emission Factor
    - HP = Average Rated Horsepower
    - LF = Load Factor
    - Act = Activity (# operating hours/year)
- Age distribution taken into account
  - Summed across all model years

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Population Inputs

- Power Systems Research (PSR) database
  - Proprietary
  - 1996 state level sales data
  - Also used by US EPA, NESCAUM
- California Dept. of Finance human population data
  - County-specific data used for spatial allocation and population growth
- Local air district permit files and survey data
  - Used to adjust PSR data by horsepower class
  - Used for “other” population; backup/prime split
  - Used for agricultural engine population

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Statewide Population Results

Equipment	Population	Percent
Agricultural		
Irrigation Engines	5338	20%
Commercial (non-agricultural)		
Prime Generators	627	2%
Backup Generators	11909	45%
Prime Pumps	408	2%
Backup Pumps	7750	29%
Other	289	1%
Commercial Total	**20983**	80%
Grand Total	**26321**	100%

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Emission Factor Inputs

- Reflect existing regulations
- Same for all equipment
- Vary by horsepower class, model year
- Ranges (g/bhp-hr):
  - ROG: 0.10-1.84
  - NOx: 2.45 - 14
  - PM: 0.11 - 0.84
  - CO: 0.92 - 5

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Activity Inputs

Equipment	Load Factor	Activity (hours/year)
Agricultural		
Irrigation Pumps	0.65	1500
Commercial		
Prime Generators	0.74	953
Backup Generators	0.74	30
Prime Pumps	0.74	953
Backup Pumps	0.74	30
Other	0.375 - 0.8	23 - 1226

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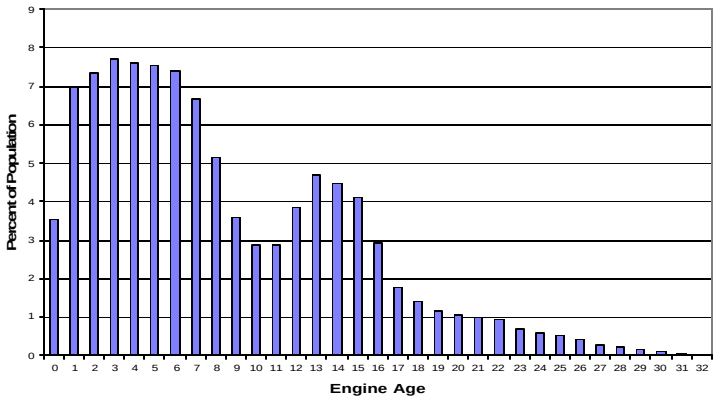
Age Distribution

- Same for all equipment types, horsepower
- 16 year “half life”



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Emission Results (Year 2002)

		Emissions (tons/day)			
Equipment	**Population**	**PM**	**ROG**	**NOx**	**CO**
Agricultural					
Irrigation Engines	5338	1.5	4.3	21.1	5.8
Commercial					
Prime Generators	627	0.3	0.6	6.3	2.0
Backup Generators	11909	0.1	0.3	3.3	1.0
Prime Pumps	408	0.2	0.4	4.1	1.3
Backup Pumps	7750	0.1	0.2	2.1	0.7
Other	289	289.0	0.1	0.9	0.3
Commercial Total	**20983**	**289.8**	**1.4**	**16.6**	**5.3**
Grand Total	**26321**	**291.3**	**5.7**	**37.7**	**11.1**

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Summary

- Consistent statewide methodology
- Reconciled population estimates with district permit data
- Current California emission factors used
- Activity data assumptions verified by survey
- Inventory to be updated as new information available

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Next Steps

- Stakeholder input
  - Appropriateness of:
    - Activities
    - Age Distribution
    - Emission Factors
    - Other Assumptions
- Revise inventory to reflect new information
- ARB Board Hearing: November, 2003

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