

Public Meeting Regulatory and Non-Regulatory Fuels Activities

November 09, 2004

California Environmental Protection Agency



Air Resources Board

Agenda

- ✦ **Introductions**
- ✦ **Implementation - Diesel Lubricity Standard**
- ✦ **Implementation - CaRFG3**
- ✦ **Consideration of Proposed Changes to the CaRFG Standards**
- ✦ **Consideration of Proposed Regulations to Extend the CARB Diesel Fuel Regulations for Intrastate Locomotives and Commercial Harbor Craft.**
- ✦ **Presentations by Others**
- ✦ **Open Discussion**

Implementation – Diesel Lubricity Standard

ARB Diesel Fuel Lubricity Standard Phase I Implementation

- ✦ ASTM standard, identical to ARB Phase I standard, to become effective January 1, 2005
- ✦ ARB lubricity standard will defer to ASTM standard when DMS adopts and enforces

Jet Fuel Contamination Concern with Lubricity Additive in Pipeline

- ✦ Joint Subcommittee E / Subcommittee J Task Force met 10/22/04
 - Increased level of concern regarding possible lubricity additive contamination in jet fuel
- ✦ Interim pipeline protocol worked out between Kinder Morgan, WSPA members, and government agencies
 - Lubricity additization rates will remain at historical levels until terminal additization can be implemented
 - Kinder Morgan will coordinate shipments to assure that jet fuel will not immediately follow lubricity additized diesel fuel

Delay in ARB Lubricity Standard Implementation Date

- ✦ Implementation of 520 micron maximum WSD standard is expected to increase additization levels
- ✦ Terminal additization will not be installed and operational for vast majority of terminals by the 1/1/05 effective date

Delay in ARB Lubricity Standard Implementation Date

- ✦ Staff will propose that the Board delegate to the Executive Officer for consideration and adoption of an emergency amendment delaying start of Diesel Fuel Lubricity Standard by 120-day

Implementation of Phase 3 RFG Regulation

Oxygen Range and Oxygenates

- ✦ Oxygen Range for 1.8% to 2.2% oxygen content is evaluated at 2.0% and for 2.5% to 2.9% is evaluated at 2.7%.
- ✦ Staff has been asked to investigate the practicality of creating a similar procedure for oxygenate content.
- ✦ To ensure that there is no loss in benefits, it is necessary to validate the CARBOB Model.
- ✦ Several refineries have submitted data for the purpose of validating CARBOB Model

Consideration of Proposed Changes to the CaRFG Regulations

Proposed Changes to CaRFG Regulations

- ✦ Revise requirements for documentation for transfer of denatured ethanol for use in California gasoline
- ✦ Revise restriction on blending CARBOB with other products
 - Add provision to allow protocols for blending transmix into CARBOB terminal tanks
 - Add provision to allow blending of limited amounts of California gasoline containing ethanol
 - Add provision to allow protocols for other situations

Proposed Changes to CaRFG Regulations (Continued)

- ✦ Revise RVP compliance requirements for CA gasoline transported to South Coast by marine vessel
 - Proposed that the fuel shall be subject to the regulatory control periods for production and import facilities identified in section 2262.4(b)(2)(A)
- ✦ Delete CARBOB importer sampling, testing, and record-keeping requirement

Proposed Changes to CaRFG Regulations (Continued)

- ✦ Miscellaneous improvements and corrections
 - Clarifying that “import facility” means “storage tank”
 - In footnote 2 of section 2266.5(a)(6)(A) table, replace “December 31, 2004” with “December 31, 2005”
 - In section 2266.5(g)(1)(C), replace H&SC reference “section 43021” with “section 43026”
 - “...Procedures for Evaluating Alternative Specifications...” candidate formulation oxygen range of 3.3-3.7% to be treated as 3.5% in CaRFG3 Predictive Model
 - Other minor changes which improve compliance flexibility

Impacts

- ✦ No significant environmental and economical impacts identified.

Proposed Changes to CaRFG Regulations

- ✦ Proposed amendments posted on website
<http://www.arb.ca.gov/regact/carfg304/carfg304.htm>
- ✦ November 18, 2004 Hearing for Consideration by the Board
- ✦ Written comments must be submitted to the Clerk of the Board by November 18th, 2004.

Diesel Fuel for Locomotive and Marine Diesel Engines



Locomotives and Marine Vessels



California Low Sulfur Diesel Fuel Regulations

- ✦ Board approved on July 2003.
- ✦ Effective June 1, 2006.
- ✦ Low sulfur (15 ppmw) diesel fuel designed to enable advanced control technologies.
 - Aligned with U.S. EPA low sulfur diesel fuel.
- ✦ Retains aromatic hydrocarbon standard with flexibility to producers.

Federal Diesel Fuel Programs

✦ Onroad Diesel:

- Implemented October 1993.
- Low sulfur will be implemented in 2006.

✦ Nonroad Diesel Fuel:

- Implementation scheduled for 2007.
- Low sulfur to be implemented in 2010, except locomotives and marine vessels.
- Low sulfur to apply to locomotives and marine vessels in 2012.

Comparison of California and Federal Diesel Fuel Emission Benefits (tons/day)

Pollutant	Federal	California
PM (Directly Emitted)	4	20
NO _x	0	70

Intrastate Locomotive Fueling Patterns

- ✦ Operations performed nearly all within California borders (at least 90% or more).
- ✦ California fuel distribution system limits fuel choices for locomotives to:
 - CARB diesel
 - U.S. EPA onroad

Interstate Locomotive Fueling Patterns

- ✦ Have the ability to enter and exit California without fueling.
 - Refuel at about 1,000 miles; Max. range up to 1,500 miles.
- ✦ Most interstate locomotive diesel fuel used in California can be purchased from out-of-state.
 - Lower quality, high sulfur (up to 5,000 ppmw).
 - Sulfur level will lower to 500 ppmw in 2007.

Locomotive Diesel Fuel Dispensed and Consumed in California

(millions of gallons)

<u>RAILROAD</u>	<u>CARB</u>	<u>USEPA</u>	<u>TOTAL</u>
Class I	6.4	16.9	23.3
Passenger	19.9	0.5	20.4
<u>Class III</u>	<u>2.1</u>	<u>1.2</u>	<u>3.3</u>
TOTAL	28	19	47
Interstate	12	89	101
TOTAL	40	108	148

Intrastate Locomotive Survey

- ✦ Worked with industry to develop the survey.
- ✦ Mailed in May 2004 and placed on ARB website.
- ✦ Mailed to 50 intrastate locomotive operators.
- ✦ Received responses by July 2004 from nearly all of the intrastate locomotive operators.

Profile of Class I Freight Railroads' Intrastate Operations

- ✦ Two Class I freight railroads:
 - Union Pacific Railroad (UPRR).
 - Burlington Northern and Santa Fe (BNSF).
 - Typically, railyard and short haul locomotives.
- ✦ Nearly 400 intrastate locomotives.
- ✦ Average about 2,400 horsepower and 15 years old.
- ✦ Average about 60,000 gallons of diesel per locomotive annually.

Profile of Passenger Trains

Intrastate Operations

- ✦ Seven operations within the state.
- ✦ Federal and State operations:
 - Pacific Surfliner, Capitol Corridor, and San Joaquin.
- ✦ Regional and local operations:
 - Metrolink, CalTrain, Coaster, and ACE.
- ✦ 113 locomotives.
- ✦ Average 3,100 horsepower and about 10 years old.
- ✦ Average about 180,000 gallons of diesel per locomotive annually.

Profile of Class III Railroads

Intrastate Operations

- ✦ Twenty Class III railroads.
- ✦ About 120 intrastate locomotives.
- ✦ Average 1,640 horsepower (150-3,000 hp).
- ✦ Average about 40 years old.
- ✦ Average about 28,000 gallons of diesel per locomotive per year.

California's Harborcraft Survey

- ✦ 2002 Commercial Harborcraft Survey.
- ✦ Survey report completed in March 2004.
- ✦ Collected data on 900 vessels and 1,800 engines (fuel consumption, age, activity, etc.)
- ✦ Data from 1999-2001.
- ✦ Using information to improve the ARB harborcraft emissions inventory.

Profile of Harborcraft Fleet

- ✦ About 4,000 statewide.
- ✦ Commercial fishing boats represent about 65% of total.
- ✦ Ferries consume about 35% of diesel annually.
- ✦ Primary engines range up to 3,600 hp.
- ✦ Auxiliary engines range up to 400 hp.
- ✦ Average about 30 years old.

Harborcraft Diesel Fuel Consumption

(millions of gallons)

<u>HARBORCRAFT</u>	<u>CARB</u>	<u>U.S. EPA</u>	<u>TOTAL</u>
Commercial	37.1	45.3	82.4
<u>Recreational</u>	<u>0.1</u>	<u>4.9</u>	<u>5.0</u>
TOTAL	37	50	87

What are the proposed regulatory amendments?

- ✦ CARB diesel fuel required for intrastate locomotives and harborcraft:
 - January 1, 2006: SCAQMD harborcraft only.
 - January 1, 2007: Statewide harborcraft and intrastate locomotives
- ✦ Alternative Emission Control Plan (AECPP) for intrastate locomotives.
- ✦ Potential exemption for military harborcraft.
 - Consistent with current exemption for vehicle uses.

Which harborcraft and locomotives are impacted?

- ✦ Harborcraft:
 - Based on vessel size and displacement.
 - Does not include oceangoing vessels.
- ✦ Intrastate Diesel-Electric Locomotives:
 - Operate 90% or more within California.
 - Does not include some Tier II locomotives subject to the South Coast MOU.

Staff Modifications to the Proposal

- ✦ Exemption for military harborcraft
 - National security.
 - Tactical requirements.

Anticipated CARB Diesel Fuel Emission Benefits

- ✦ NO_x - 6%
- ✦ SO_x - 95%
- ✦ PM - 14%

Anticipated 2007 Statewide Emission Reductions (tons per day)

<u>TYPE</u>	<u>NO_x</u>	<u>SO_x</u>	<u>PM *</u>
Locomotives	1	0.3	0.2
<u>Harborcraft</u>	<u>1</u>	<u>1.5</u>	<u>0.4</u>
TOTAL	2	1.8	0.6

◆ Includes 0.4 tpd of NO_x emission reductions in the SCAQMD under SIP Measure Marine-.

* Includes both directly and indirectly emitted PM emission benefits.

Impacts on Risk and Mortality

- ✦ Lower directly and indirectly emitted PM.
 - Significantly reduce exposure to diesel PM.
- ✦ Reduced mortality
 - 71 avoided deaths by 2010.
 - 233 avoided deaths by 2020.
- ✦ Local risk exposure reduced in environmental justice areas.

Impact on California Diesel Fuel Supply and Demand

- ✦ New incremental CARB diesel demand of about 70 million gallons.
- ✦ Proposed regulations should not affect ability of California refiners to supply sufficient quantities of diesel fuel to the California market.

Estimated Costs in 2007

- ✦ Incremental Costs: 3 cents per gallon.
 - Transition from U.S. EPA to CARB diesel fuels.
- ✦ Statewide Costs: \$2 to \$3 million annually.
- ✦ Lower sulfur will decrease engine wear.
- ✦ Lower sulfur will increase life of lubricating oils.
- ✦ Cost-Effectiveness: \$1.10 to \$1.60.
 - per pound of NO_x and PM reduced.

Economic Impacts

- ✦ Cost-effectiveness within range of ARB control measures.
- ✦ No significant impact expected on California economy.
- ✦ No capital costs to refiners.
- ✦ Estimate minor impacts on owners/operators.
- ✦ Expect no significant effects on small businesses.

Presentations by Others

Open Discussion

Closing Remarks