

**DRAFT REGULATION  
TO REDUCE PARTICULATE MATTER EMISSIONS FROM  
TRANSPORT REFRIGERATION UNITS**



**October 8, 2003**



**California Environmental Protection Agency**

**Air Resources Board**

## **Overview**

- TRU ATCM Action to-date
- Proposed TRU ATCM
- Costs
- Current Schedule
- Contacts

# TRU ATCM Action To-Date

- 5th TRU Workshop
- 8 TRU Workgroup meetings
- Four Special TRU Electrification Workgroup meetings
- Established Control Technology Matrix
- Provided draft TRU regulation language
- Completed information gathering
  - ◆ TRU and TRU generator set manufacturers
  - ◆ TRU engine manufacturers
  - ◆ Emission control system manufacturers
- Completed 25 facility visits

- Collected preliminary cost data for alternative technologies
- Gathered information on gen sets
- Learned about intermodal facilities
- Learned about leasing operations
- Evaluated special TRU test-cycle
- Working on diesel PM filter demos
- Data logging TRU engines
- Investigating Ag TRU operations
- Working with facility databases
- Working with fleet databases

# Proposed TRU ATCM

## Applicability

- Applies to all TRUs and TRU gen sets operated in California & used with
  - ◆ Trucks and trailers
  - ◆ Refrigerated railcars
  - ◆ Refrigerated shipping containers
- Facilities in California where TRUs & TRU Gen Sets Operate
- Only Exemption - TRUs used in Military Tactical support equipment

## TRU ATCM Overview

- In-Use TRUs & TRU Gen Sets - Owner/Operator requirements:
  - ◆ Phased in-use performance standards
  - ◆ Recordkeeping and annual reporting
- Facility requirements
  - ◆ Recordkeeping and one-time report
  - ◆ Reports will be evaluated to determine further need for regulation

## New Engine Standards (reference)

- Harmonize with U.S. EPA's *Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel*
  - ◆ Notice of Proposed Rulemaking out on April 15, 2003 (May 23, 2003 Federal Register)
  - ◆ PM and NMHC+NO<sub>x</sub> standards (g/hp-hr)

HP Category	Compliance Year						
	2008	2009	2010	2011	2012	2013	2014
<25 hp	0.30 PM						
≥25 to <75 hp	0.22 PM					0.02 PM 3.5 NMHC+NO <sub>x</sub>	

## Requirements In-Use TRUs & TRU Gen Sets

- In-use performance standards would be established for:
  - ◆ <25 hp TRUs
  - ◆ ≥25 hp TRU and TRU gen sets

## In-Use TRUs & TRU Gen Sets (cont'd)

- <25 hp TRU PM performance standards

In-Use Emission Category	Engine Certification (g/hp-hr)	Level of VDECS Equipped with
Low Emission TRU (LETRU or L)	0.30	Level 2
Ultra-Low Emission TRU (ULETRU or U)	NA(1)	Level 3

- (1) Technology reviews in 2007 and 2009 to reevaluate appropriate ULETRU g/hp-hr requirement

## In-Use TRUs & TRU Gen Sets (cont'd)

- $\geq$ 25 hp TRU and TRU gen set PM performance standards

In-Use Emission Category	Engine Certification (g/hp-hr)	Level of VDECS Equipped with
Low Emission TRU (LETRU or L)	0.22	Level 2
Ultra-Low Emission TRU (ULETRU or U)	0.02	Level 3

- ULETRU includes a TRU using one of the “alternative technologies”

## In-Use TRUs & TRU Gen Sets Compliance Options

- Owner/Operators can choose from a variety of compliance options to meet the in-use performance standards
  - ◆ Replacing old engines with new, certified engines
  - ◆ Retrofitting existing engines with a Verified Diesel Emission Control Strategy (VDECS)
  - ◆ Using one of the “alternative technologies”

## In-Use TRUs & TRU Gen Sets (cont'd)

- Verification classification levels for VDECS
  - ◆ Level 2 -  $\geq 50\%$  reduction
  - ◆ Level 3 -  $\geq 85\%$  reduction or 0.01 g/bhp-hr

## In-Use TRUs & TRU Gen Sets (cont'd)

- Alternative technologies:
  - ◆ Electric standby,
  - ◆ Cryogenic temperature control (or hybrid),
  - ◆ Alternative-fueled engines,
  - ◆ Alternative-diesel-fueled engines,
  - ◆ Fuel cells, or
  - ◆ Any other system approved by EO not to emit diesel PM while at affected facility.

## In-Use TRUs & TRU Gen Sets (cont'd)

- Compliance Dates (general)
  - ◆ 2001 and previous engine model years
    - ◆ Meet LETRU by December 31, 2008
    - ◆ Meet ULETRU by December 31, 2015
  - ◆ 2002 engine model years
    - ◆ Meet LETRU 7 years after model year  
2002 - by December 31, 2009
    - ◆ Meet ULETRU 7 years later  
2002 - December 31, 2016
  - ◆ 2003 and subsequent engine model years meet ULETRU 7 years after model year

## In-Use TRUs & TRU Gen Sets (cont'd)

■ Compliance dates for <25 hp

MY	In-Use Compliance Year													
	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20
'01 & Prev		L	L	L	L	L	L	L	U	U	U	U	U	U
'02			L	L	L	L	L	L	U	U	U	U	U	U
'03				U	U	U	U	U	U	U	U	U	U	U
'04					U	U	U	U	U	U	U	U	U	U
'05						U	U	U	U	U	U	U	U	U
'06							U	U	U	U	U	U	U	U

## In-Use TRUs & TRU Gen Sets (cont'd)

■ Compliance dates for ≥25 hp

MY	In-Use Compliance Year													
	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20
'01 & Prev		L	L	L	L	L	L	L	U	U	U	U	U	U
'02			L	L	L	L	L	L	L	U	U	U	U	U
'03				U	U	U	U	U	U	U	U	U	U	U
'04					U	U	U	U	U	U	U	U	U	U
'05						U	U	U	U	U	U	U	U	U
'06							U	U	U	U	U	U	U	U
'07								U	U	U	U	U	U	U
'08									U	U	U	U	U	U
'09										U	U	U	U	U
'10											U	U	U	U
'11												U	U	U
'12													U	U
'13														U

## **In-Use TRUs & TRU Gen Sets (cont'd)**

### **■ Identification Number**

- ◆ Owners/operators apply for an ARB identification number to permanently affix to TRUs & TRU gen sets
  - ◆ Required for California-based
  - ◆ Voluntary for non-California-based
- ◆ Paint-on identification number
- ◆ Bar code and/or other technology will be considered

## **In-Use TRUs & TRU Gen Sets (cont'd)**

- **Early Compliance:** Must meet 2008 tier 4 federal standards (i.e., LETRU values) by installing new engine or retrofitting
  - ◆ Up to 3 year delay in ULETRU deadline (for 2002 & previous engine model years)
  - ◆ ARB certificate and label issued to identify specific TRU and number of years delay
  - ◆ Goal is real emission reductions

## In-Use TRUs & TRU Gen Sets (cont'd)

- Annual recordkeeping and reporting
  - ◆ Starting in 2009
  - ◆ All TRU and TRU gen set operators that operate in California must submit:
    - ◆ Company contact information
    - ◆ Terminals owned or leased in California
    - ◆ TRU & TRU gen set inventory

## Facility Reporting

- One-time facility report must be submitted by January 31, 2005
- Applies to all facilities in California with 20 or more loading dock doors or employees (affiliate facilities with less than 20 employees also subject):
  - ◆ A. Frequented by TRUs and TRU gen sets;
  - ◆ B. Under facility control; and
  - ◆ C. Where perishable goods are loaded.
- Report to contain contact, NAICS, and refrigerated storage and activity information

## **Fuel-use and Fuel-use Recordkeeping Requirements**

- Beginning September 1, 2006
  - ◆ All sales, offers, or supplies of fuel for TRUs/TRU gen sets shall be fuel that is lawful as vehicular fuel (CARB diesel)
- Operators opting to use alternative diesel fuel to comply with in-use requirements must:
  - ◆ Keep records to show exclusive use of alternative-diesel fuel

## **Estimated Costs of ATCM**

- Administration Cost:
  - ◆ Initial - \$6,400 to \$12,000
  - ◆ Additional enforcement costs may be required beginning in 2004-2005
- Statewide Cost to Business: 101 to 169 million dollars over 13 years

## Estimated Costs of ATCM

- Example Compliance Options
  - ◆ LETRU - fuel-borne catalyst plus catalyzed wire mesh filter
  - ◆ ULETRU - dual fuel using LPG and diesel fuel pilot injection
- Small Business Cost Over 13 Years
  - ◆ Initial: \$2,100 to \$41,000
  - ◆ Annual: \$200 to \$6,000
- Typical Business Cost Over 13 Years
  - ◆ Initial: \$43,000 to \$513,000
  - ◆ Annual: \$8,400 to \$73,000

## Summary

- Requirements for
  - ◆ In-Use TRUs and TRU Gen Sets
  - ◆ Facilities - recordkeeping and reporting
  - ◆ Fuels - vehicular diesel fuel

## Regulatory Development Schedule

- Proposed ATCM and staff report available: October 24, 2003
- 45-day written public comment period begins: October 24, 2003
- Board Hearing: December 11, 2003

## Contacts

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