

DRAFT TRU Airborne Toxic Control Measure Overview
June 5, 2003

This summary provides a short description of the two main elements of the draft proposed transport refrigeration unit (TRU) ATCM.

❖ **New PM Emission Standards (not part of ATCM).**

- Applicable to all new TRU engines

Table 1: Tier 4 Nonroad CI Engine Standards (g/hp-hr)

HP Category	Compliance Year						
	2008	2009	2010	2011	2012	2013	2014
<25 hp	0.30 ¹ PM						
≥25 to <75 hp	0.22 PM					0.02 PM 3.5 NMHC+NOx	

- EPA’s proposal includes a special TRU certification test cycle that better represents actual TRU operations (but, would not apply to TRU gen sets)
- ARB adoption tentatively planned for 2004

❖ **In-Use TRU and TRU gen set PM Emission Standards & Compliance Schedules**

- Applicable to all TRUs and TRU gen sets operated in California
 - Except “low use” TRUs (infrequent out-of-state carriers and seasonal)
- **In-Use Compliance Schedule**
 - In-use emission category requirements must be met in accordance with the schedules shown below. Once a unit qualifies as “ultra-low emission TRU” (ULETRU), then no further emission reductions are necessary for that unit.

Table 2: In-Use Compliance Dates for <25 HP TRU Engines

MY	In-Use Compliance Year ²													
	'07 ⁴	'08 ³	'09 ⁴	'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				L/U	L/U	L/U	U	U	U	U	U	U	U	U
'04					L/U	L/U	U	U	U	U	U	U	U	U
'05						L/U	U	U	U	U	U	U	U	U
'06 ⁵							U	U	U	U	U	U	U	U

¹ ARB and U.S. EPA will perform a technical review in 2007 to evaluate DOC or filter-based standard for <25 hp category in the 2010 to 2013 timeframe.

² Compliance date is December 31st of the compliance year shown. Dark shaded areas without letter codes have no requirements, pending in-use compliance date. “L” means must meet LETRU requirements. “U” means must meet ULETRU requirements. “L/U” means LETRU requirements apply unless ULETRU technologies are determined to be both available and cost-effective for a broad spectrum of TRUs at the 2007 & 2009 technology review.

³ For 2002 and previous MYs, operators may elect to bring these units into compliance with LETRU requirements early. Early compliance would qualify these units to delay compliance with ULETRU requirements one year for every year of early compliance. A maximum of 3 years delay would be allowed. For example, 1 year delay for 1 year early compliance, 2 years delay for 2 years early compliance, and 3 years delay for 3 years early compliance.

⁴ ARB technology reviews in 2007 & 2009 will evaluate the availability and cost-effectiveness of Level 3 VDECS and alternative technologies for ULETRU.

⁵ For <25 hp TRUs and TRU gen sets, model years past 2006 would be required to comply with ULETRU PM emission standards by the end of the seventh year after the model year.

Table 3: In-Use Compliance Dates for ≥ 25 HP TRU Engines

MY	In-Use Compliance Year ⁶													
	'07 ⁸	'08 ⁷	'09 ⁸	'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				L/U	L/U	L/U	U	U	U	U	U	U	U	U
'04					L/U	L/U	U	U	U	U	U	U	U	U
'05						L/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														

- **In-Use Emission Standards:** In-use TRUs and TRU gen sets would qualify for the following in-use emission categories, depending on engine certification levels or the verification classification level of VDECS used:

Table 4: <25 HP TRU and TRU Gen Sets

In-Use Emission Category	Engine Certification (g/hp-hr)	Level of VDECS Equipped with
Low Emission TRU (LETRU or L)	0.30	Level 1
Ultra-Low Emission TRU (ULETRU or U)	TBD ⁷	Level 2 ⁹ or better

Example: A 19 horsepower TRU would qualify as an LETRU if it was equipped with either an engine certified to 0.30 g/hp-hr or it was equipped with a Level 1 verified diesel emission control strategy.

Table 5: >25 HP TRU and TRU Gen Sets

In-Use Emission Category	Engine Certification (g/hp-hr)	Level of VDECS Equipped with
Low Emission TRU (LETRU or L)	0.22	Level 1 or 2 ⁹
Ultra-Low Emission TRU (ULETRU or U)	0.02	Level 3

⁶ Compliance date is December 31st of the compliance year shown. Black shaded areas are years with no requirements since in-use compliance year precedes model year. Dark shaded areas without letter codes have no requirements, pending in-use compliance date. “L” means must meet LETRU requirements. “U” means must meet ULETRU requirements. “L/U” means LETRU requirements apply unless ULETRU technologies are determined to be both available and cost-effective for a broad spectrum of TRUs at the 2009 technology review.

⁷ For 2002 and previous MYs, operators may elect to bring these units into compliance with LETRU requirements early. Early compliance would qualify these units to delay compliance with ULETRU requirements one year for every year of early compliance. A maximum of 3 years delay would be allowed. For example, 1 year delay for 1 year early compliance, 2 years delay for 2 years early compliance, and 3 years delay for 3 years early compliance.

⁸ ARB technology reviews in 2007 & 2009 will evaluate availability and cost-effectiveness of Level 3 VDECS and alternative technologies for ULETRU.

⁹ The highest level VEDECS that has been verified and found to be cost-effective shall be used to meet this emission category.

“Ultra-Low Emission TRU” (ULETRU)” also means a TRU using one of the “alternative technologies” on the list (see below).

Example: A 34 horsepower TRU would qualify as an ULETRU if it was equipped with either an engine certified to 0.02 g/hp-hr, equipped with a Level 3 verified diesel emission control strategy, or fueled exclusively with verified alternative diesel fuel.

- Alternative Technologies - New TRUs and TRU gen sets may be equipped with alternative technologies that could eliminate the need to operate under diesel engine power while at a facility. Examples and limitations follow:
 - TRUs equipped with electric standby.
 - TRUs equipped with cryogenic temperature control systems and hybrid cryogenic temperature control systems.
 - TRUs and TRU gen sets equipped with alternative-fueled engines. Note: Depending on horsepower, these engines may need to meet other emission standards.
 - TRUs and TRU gen set engines fueled exclusively with an alternative diesel-fuel that has been verified as a VDECS, provided it is used in accordance with recordkeeping and requirements to assure exclusive use of such fuel.
 - TRUs powered by fuel cells.
 - Any other system approved by the Executive Officer to not emit diesel PM or increase public health risk while at an affected facility.

- It is our intent to closely monitor in-use emission control technologies for TRUs. If we identify broadly applicable control technologies that are technically feasible and cost-effective, we will modify the in-use standards and compliance schedule to require application of the technology as soon as possible (2 to 3 years implementation time frame).

❖ **Facility Requirements**

- Recordkeeping and reporting requirements starting January 1, 2005. This data will be used to evaluate if a follow-on statewide regulation is necessary to reduce TRU and TRU gen set diesel PM emissions beyond those required by the in-use standards for specific types of facilities.

- Information required follows:
 - Contact information for the facility’s responsible official.
 - What type of distribution facility is this? (e.g. grocery distribution, foodservice distribution, meat and poultry distribution, egg distribution, dairy product distribution, produce distribution, beer and beverage distribution, manufactured food distribution, other (specify types of goods that are shipped)).
 - The number of loading dock doors serving refrigerated storage space.
 - The number of square feet of refrigerated storage space.
 - The number of full time equivalent employees working at the facility.
 - The number of TRUs or TRU gen sets under facility control by model year and horsepower category.
 - Do you lease or rent reefer trucks, trailers, containers, or railcars? If so how many?
 - Total annual TRU engine operating hours for all TRUs or TRU gen sets under facility control.
 - The average weekly number of inbound reefer trucks, trailers, containers, and railcars delivering goods to the facility.
 - The average weekly number of outbound reefer trucks, trailers, containers and railcars delivering goods from the facility.

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- An estimate of the average total number of hours per week that outbound TRU or TRU gen set engines operate while at the facility.
- An estimate of the average total number of hours per week that inbound TRU or TRU gen set engines operate while at the facility.

**** Proposed Draft ATCM Concepts (June 5, 2003)****

[At the May 14, 2003 TRU Workgroup conference call, ARB staff presented revised regulatory concepts based upon comments received on our March 6, 2003 draft regulatory language. The Workgroup provided comments to proposed regulatory concepts and draft regulatory language. This Proposed Draft ATCM (June, 5, 2003) is our attempt to incorporate the comments we received into regulatory language.

Staff are interested in comments relevant to all of the concepts proposed herein. This is NOT final regulatory language.]

Adopt new Section 2022, Title 13, Article 4, within Chapter 3, Division 3, California Code of Regulations, to read as follows: (Note: the entire text of section 2022 set forth below is new language proposed to be added to the California Code of Regulations.)

- (a) Purpose. Diesel particulate matter (PM) was identified in 1998 as a toxic air contaminant. This regulation implements provisions of the Diesel Risk Reduction Plan, adopted by the Air Resources Board in October, 2000, as mandated by the Health and Safety Code Sections 39650-39675, to reduce emissions of substances that have been determined to be toxic air contaminants. Specifically, this regulation will use a phased approach to reduce the diesel PM emissions from in-use transport refrigeration units (TRUs) and TRU generator (gen) set equipment used to power electrically driven refrigerated shipping containers and trailers that are sold and used in California.
- (b) Applicability.
 - (1) Except as provided in subsection (c), this regulation applies to TRU operators and lessors that operate in the State of California, specifically truck and trailer TRU operators and lessors, refrigerated shipping container TRU operators, and lessors, TRU gen set operators and lessors, and refrigerated railcar TRU operators and lessors (see definition of operator). Subsection (e)(1) lists applicable requirements and compliance schedules for all such persons subject to this paragraph. Subsection (f)(1) lists applicable recordkeeping and reporting requirements for all such persons subject to this paragraph.
 - (2) Except as provided in subsection (c), this regulation applies to facilities located in California that meet the following criteria:
 - (A) Facilities frequented by truck-mounted TRUs, trailer-mounted TRUs, refrigerated shipping container TRUs, or refrigerated rail car TRUs where TRUs or TRU gen sets are under facility control (see definition) and where perishable goods are loaded for distribution, and
 - (B) Facilities which have 20 or more loading dock doors serving refrigerated areas, or facilities with 20 or more employees, and
 - (C) Facilities that qualify under the criteria listed above, and whose parent company has more than one facility in the Sate of California

Subsection (e)(2) lists the requirements and compliance schedule. Subsection (f)(2) lists monitoring, recordkeeping and reporting requirements.

- (3) Except as provided in subsection (c), this regulation applies to all TRU fuel tanks and their fueling. Subsections (e)(3) lists the requirements and compliance dates.
- (c) Exemptions. This regulation does not apply to:
- (1) Military tactical support equipment.
 - (2) TRUs and TRU gen sets that are annually certified as “low use” TRUs. This exemption expires on the date that the in-use performance standards for ultra-low emission TRUs (ULETRU) apply to the model year of the TRU. Subsection (e)(4) lists the requirements for qualifying for this exemption.
- (d) Definitions. For purposes of this regulation, the following definitions apply:
- (1) “Active TRU or TRU Generator Set” means the engine is operated at least 40 hours per year, as indicated on a non-resettable hour meter.
 - (2) “Affiliate or Affiliation” refers to a relationship of direct or indirect control or shared interests between the subject business and another business.
 - (3) “Alternative Fuel” means natural gas, propane, ethanol, methanol, or advanced technologies that do not rely on diesel fuel, except as a pilot ignition source at an average ratio of less than 1 part diesel fuel to 10 parts total fuel on an energy equivalent basis. Alternative fuels also means any of these fuels used in combination with each other or in combination with other non-diesel fuels. Alternative-fueled engines shall not have the capability of idling or operating solely on diesel fuel at any time.
 - (4) “Alternative Diesel Fuel” means any fuel used in diesel engines that is not a reformulated diesel fuel as defined in Sections 2281 and 2282 of Title 13, of the California Code of Regulations, and does not require engine or fuel system modifications for the engine to operate, although minor modifications (e.g. recalibration of the engine fuel control) may enhance performance. Examples of alternative diesel fuels include, but are not limited to, biodiesel, Fischer Tropsch fuels, and emulsions of water in diesel fuel. Natural gas is not an alternative diesel fuel. An emission control strategy using a fuel additive will be treated as an alternative diesel fuel based strategy unless:
 - (A) The additive is supplied to the vehicle or engine fuel by an on-board dosing mechanism, or
 - (B) The additive is directly mixed into the base fuel inside the fuel tank of the vehicle or engine, or
 - (C) The additive and base fuel are not mixed until vehicle or engine fueling commences, and no more additive plus base fuel combination is mixed than required for a single fueling of a single engine or vehicle
 - (5) “ARB” means the California Air Resources Board.

- (6) “B100 Biodiesel Fuel” means 100% biodiesel fuel derived from vegetable oil or animal fat and complying with ASTM D 6751-02 and commonly or commercially known, sold, or represented as “neat” biodiesel or B100.
- (7) “B100 Biodiesel-Fueled” (compression-ignition engine) means a compression-ignition engine that is fueled by B100 biodiesel fuel. B100 biodiesel fuel is an alternative diesel fuel.
- (8) “Business” means an entity organized for profit including, but not limited to, an individual, sole proprietorship, partnership, limited liability partnership, corporation, limited liability company, joint venture, association or cooperative; or solely for purposes of the Prompt Payment Act (Government Code 927 et seq.), a duly authorized nonprofit corporation.
- (9) “CARB Diesel Fuel” means any diesel fuel that meets the specifications defined in *13 CCR 2281* and *13 CCR 2282*.
- (10) “Carbon Monoxide (CO)” means a colorless, odorless gas resulting from the incomplete combustion of hydrocarbon fuels.
- (11) “Compression Ignition (CI) Engine” means an internal combustion engine with operating characteristics significantly similar to the theoretical diesel combustion cycle. The regulation of power by controlling fuel supply in lieu of a throttle is indicative of a compression ignition engine.
- (12) “Cryogenic Temperature Control System” means a heating and cooling system that uses a cryogen, such as carbon dioxide or liquid nitrogen that is routed through an evaporator coil that cools air blown over the coil. The cryogenic system uses a vapor motor to drive a fan and alternator, and a propane-fired heater superheats the carbon dioxide for heating and defrosting.
- (13) “Diesel Fuel” means any fuel that is commonly or commercially known, sold, or represented as diesel fuel No. 1-D or 2-D, pursuant to the specifications in *ASTM Standard Specification for Diesel Fuel Oils D975-98*.
- (14) “Diesel-Fueled” means fueled by diesel fuel or CARB diesel fuel in whole or in part, except as allowed for a pilot ignition source under the definition for “alternative fuel”.
- (15) “Diesel Particulate Filter (DPF)” means an emission control technology that reduces PM emissions by trapping the particles in a flow filter substrate. Periodically the collected particles are either physically removed or oxidized (burned off) in a process called regeneration.
- (16) “Diesel Particulate Matter” means the particles found in the exhaust of diesel-fueled CI engines. Diesel PM may agglomerate and adsorb other species to form structures of complex physical and chemical properties.

- (17) “Dual-Fuel Engine” means an engine designed to operate on a combination of alternative fuel, such as compressed natural gas (CNG) or liquefied petroleum gas (LPG), and conventional fuel, such as diesel or gasoline. These engines have two separate fuel systems, which either inject both fuels simultaneously into the engine combustion chamber or fumigate the gaseous fuel with the intake air and inject the liquid fuel into the combustion chamber.
- (18) “Emergency” means any of the following times:
- (A) A failure or loss of normal power service that is not part of an “interruptible load contract” (see subsection (d)(28));
 - (B) A failure of a facility’s internal power distribution system, provided the failure is beyond the reasonable control of the operator;
 - (C) When an affected facility is placed under an involuntary “rotating outage” (see subsection (d)(42)).
- (19) “Emission Control Strategy” means any device, system, or strategy employed with a diesel-fueled CI engine that is intended to reduce emissions. Examples of emission control strategies include, but are not limited to, particulate filters, diesel oxidation catalysts, selective catalytic reduction systems, alternative fuels, fuel additives used in combination with particulate filters, alternative diesel fuels, and combinations of the above.
- (20) “Executive Officer” means the Executive Officer of the California Air Resources Board or his or her delegate.
- (21) “Facility Control” means the arrival, departure, loading, unloading, shipping and/or receiving of cargo is determined by the facility (e.g scheduled receiving, dispatched shipments).
- (22) “Facility frequented by TRUs” means any facility where TRU-equipped trucks, trailers, containers or railcars are loaded or unloaded with perishable goods. This includes, but is not limited to, grocery distribution centers, food service distribution centers, cold storage warehouses, and intermodal facilities. Each business entity at a commercial development is a separate facility for the purposes of this regulation, provided the businesses are independently owned and operated (see subsection (d)(26)).
- (23) “Fuel Additive” means any substance designed to be added to fuel or fuel systems or other relate engine fuel-systems such that it is present in-cylinder during combustion and has any of the following effects: decreased emissions, improved fuel economy, increased performance of the entire vehicle or one of its component parts, or any combination thereof; or assists diesel emission control strategies in decreasing emissions, or improving fuel economy or increasing performance of a vehicle or component part, or any combination thereof. Fuel additives used in conjunction with diesel fuel may be treated as an alternative diesel fuel. See section (d)(4).
- (24) “Generator Set (gen set)” means a CI engine coupled to a generator used as a source of electricity.

- (25) “Hybrid Cryogenic Temperature Control System” means a temperature control system that uses a cryogenic temperature control system in conjunction with a diesel engine.
- (26) “Independently Owned and Operated” means a business concern that independently manages and controls the day-to-day operations of its own business through its ownership and management, without undue influence by an outside entity or person that may have an ownership and/or financial interest in the management responsibilities of the applicant business or small business.
- (27) “Intermodal Facility” means a facility involved in the movement of goods in one and the same loading unit or vehicle which uses successively several modes of transport without handling of the goods themselves in changing modes. Such a facility is typically involved in loading and unloading shipping containers and trailer vans to and from railcars, trucks, and ocean-going ships.
- (28) “Interruptible Load Contract” means a contract between an electric power supplier and an owner of a facility where the facility owner receives payment or other economic benefit (e.g. lower rates) in return for load reduction.
- (29) “In Use” TRU, TRU gen set, or engine means a TRU, TRU gen set, or engine that is not a “new” TRU, TRU gen set, or engine.
- (30) “Low Emission TRU (LETRU)” means a TRU or TRU gen set that meets the performance standards described under paragraph (e)(1)(A).
- (31) “Low-Use TRU or TRU Generator Set” means the engine operates less than 80 hours in California or hauls less than 10 loads in California in a calendar year and is certified annually in accordance with subsection (e)(4).
- (32) “Manufacturer” means a business as defined in Government Code § 14837(c).
- (33) “Military tactical support equipment (TSE) means equipment that meets military specifications, owned by the U.S. Department of Defense and/or the U.S. military services, and used in combat, combat support, combat service support, tactical or relief operations, or training for such operations.
- (34) “Model Year (MY)” means diesel-fueled engine manufacturer’s annual production period, which includes January 1st of a calendar year, or if the manufacturer has no annual production period, the calendar year.
- (35) “New” TRU, TRU gen set, or engine means any TRU, TRU gen set, or engine that has never been subject to a retail sale or lease to an ultimate purchaser. (see subsection (d)(48))
- (36) “Nitrogen Oxide (NO_x)” means compounds of nitric oxide (NO), nitrogen dioxide (NO₂), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition.

- (37) “Non-methane Hydrocarbons (NMHC)” means the sum of all hydrocarbon air pollutants except methane. NMHCs are precursors to ozone formation.
- (38) “Operator” means any person that owns (or leases to another person) a TRU or TRU gen set or any person who operates a TRU or TRU gen set, excluding an employee driver, and including but not limited to:
- (A) An individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation including but not limited to, a government corporation;
 - (B) Any city, county, district, commission, the state or any department, agency, or political subdivision thereof, any interstate body, and the federal government or any department or agency thereof to the extent permitted by law; or
 - (C) A project proponent and any of its contractors or subcontractors.
- (39) “Particulate Matter (PM)” means the particles found in the exhaust of CI engines, which may agglomerate and adsorb other species to form structures of complex physical and chemical properties.
- (40) “Rated Brake Horsepower” means the power delivered, according to the statement of the manufacturer, at the rated speed.
- (41) “Refrigerated Shipping Container TRU” means a shipping container equipped with a TRU.
- (42) “Rotating Outage” means a controlled involuntary curtailment of electrical power service to consumers as ordered by the system operator.
- (43) “System Operator” means one of the several organizations that control energy in California. System operators include, but are not limited to, the California Independent System Operator, the Los Angeles Department of Water and Power, the Imperial Irrigation District, the Sacramento Municipal Utility District.
- (44) “Terminal” means any place where a TRU-equipped truck, trailer, container, railcar or TRU gen set is regularly garaged, maintained, operated, or dispatched from, including a dispatch office, cross-dock facility, maintenance shop, business, or private residence.
- (45) “Transport Refrigeration Unit (TRU)” means refrigeration systems powered by integral internal combustion engines designed to control the environment of temperature sensitive products that are transported in semi-trailer vans, truck vans, reefer railcars, or shipping containers. TRUs may be capable of both cooling and heating.
- (46) “TRU Generator Set (TRU gen set)” means a generator set that is designed and used to provide electric power to electrically driven refrigeration units of any kind. This

includes, but is not limited to gen sets that provide electricity to electrically powered refrigeration systems for semi-trailer vans and shipping containers.

- (47) “TRUs or TRU Gen Sets Under Facility Control” means TRUs or TRU gen sets are owned or leased by the facility, its parent company, affiliate, or a subsidiary, or under contract with the above for the purpose of providing carrier service to the facility.
- (48) “Ultimate Purchaser” means with respect to a new TRU, TRU gen set, or engine, the first person who in good faith purchases a new TRU, TRU gen set, or engine for purposes other than resale.
- (49) “Ultra-Low-Aromatic Synthetic Diesel Fuel” means fuel produced from natural gas by the Fischer-Tropsch gas-to-liquid chemical conversion process, or similar process that meets the following properties:

Table 1

Property	ASTM	Value
Sulfur Content (ppmw)	D5453	<1
Aromatic Content (wt %)	D51876-99	1.5%
Polynuclear aromatic hydrocarbon (wt %)	-	0.5%
Cetane Number	D613	>74

- (50) “Ultra-Low Emission TRU (ULETRU)” means a TRU or TRU gen set that meets the performance standards described under paragraph (e)(1)(A).
- (51) “Vehicular Diesel Fuel” means any diesel fuel (A) which is not conspicuously identified as a fuel which may not lawfully be dispensed into motor vehicle fuel tanks in California; or (B) which the person selling, offering for sale, or supplying the diesel fuel knows will be dispensed into motor vehicle fuel tanks in California; or (C) which the person selling, offering for sale, or supplying the diesel fuel in the exercise of reasonable prudence should know will be dispensed into motor vehicle fuel tanks in California, and that is not the subject of a declaration under penalty of perjury by the purchaser, offeree, or recipient stating that s/he will not sell, offer for sale, or transfer the fuel for dispensing, or dispense the fuel, into motor vehicle fuel tanks in California. (ref 13 CCR, §2281(b)(12))
- (52) “Verification Classification Level” means the classification assigned to a Diesel Emission Control Strategy by the Executive Officer (e.g. Level 1, Level 2, or Level 3) as defined in the *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emission from Diesel Engines (13 CCR Sections 2700 – 2710)*.
- (53) “Verified Diesel Emission Control Strategy” (VDECS) means an emission control strategy designed primarily for the reduction of diesel particulate matter emissions that has been verified per the *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (13 CCR Sections 2700 – 2710)*. Examples of diesel retrofit systems that may be verified include, but are not limited to, diesel particulate filters, diesel oxidation

catalysts, fuel additives (e.g. fuel-borne catalysts), alternative diesel fuels, and combinations of the above

(e) Requirements.

- (1) Requirements for in-use TRUs and TRU gen sets (applicable to TRU and TRU Gen Set Operators and Lessors):

[Concept: The effects of cleaner new engines will take many years to realize due to the long life of these engines. The concept here is to reduce emissions from in-use TRUs and TRU gen sets faster than would be realized through normal attrition. Operators are provided the flexibility to choose from a variety of compliance options, including retrofitting existing engines, replacing old engines with new certified engines, replacing or retrofitting old engines with alternative fueled engines, using alternative diesel fuels exclusively, using non-diesel refrigeration technologies while at an affected facility, and retiring the TRU.

Older TRUs would be required to come into compliance first by complying with the “low emission TRU” (LETRU) emission category performance standards. Seven years later, these units would be required to comply with “ultra-low emission TRU” (ULETRU) emission category performance standards. Newer units could skip the LETRU category and be converted directly to ULETRU seven years after a model year ended. Once a unit met ULETRU criteria, no further conversions would be required.

It is our intent to closely monitor in-use emission control technologies for TRUs. If we identify broadly applicable control technologies that are technically feasible and cost-effective, we will modify the in-use standards and compliance schedule to require application of the technology as soon as possible (2 to 3 years implementation time frame).]

- (A) In accordance with the schedule set forth below in paragraph (e)(1)(C), no TRU or TRU gen set shall operate in California unless it meets the in-use emission category performance standards set forth below.
- (i) In-Use performance standard categories for <25 hp TRU and TRU gen set engines are shown in Table 2, along with the engine certification standards or the level of Verified Emission Control Strategy (VDECS) that is necessary to qualify for each category.

Table 2
<25 HP TRU and TRU Gen Set In-Use 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 1
Ultra-Low Emission TRU (ULETRU or U)	TBD ¹⁰	Level 2 or 3 ¹¹

“Ultra-Low Emission TRU” (ULETRU)” also means a TRU using one of the “alternative technologies” listed below in paragraph (e)(1)(B)(iii).

- (ii) In-Use performance standard categories for ≥ 25 hp TRU and TRU Gen Sets are shown in Table 3, along with the engine certification standards or the level of Verified Emission Control Strategy (VDECS) that is necessary to qualify for each category.

Table 3
 ≥ 25 HP TRU and TRU Gen Set In-Use 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 1 or 2 ¹¹
Ultra-Low Emission TRU (ULETRU or U)	0.02	Level 3

“Ultra-Low Emission TRU” (ULETRU)” also means a TRU using one of the “alternative technologies” listed below in paragraph (e)(1)(B)(iii).

- (B) Compliance may be achieved by purchasing the unit new, equipped to comply with the performance standards in subsection (e)(1)(A), or by implementing one of the following options.
 - (i) Replace the engine with a certified engine meeting the applicable engine performance standard shown above in paragraph (e)(1)(A), or
 - (ii) Retrofit with a Verified Diesel Emission Control Strategy (VEDECS) that meets the highest verification classification level that has been verified per the applicable table shown above in paragraph (e)(1)(A), or
 - (iii) Retrofit to use one of the *Alternative Technologies* listed below.
 - a. Electric standby, provided that the TRU is only used at facilities that offer compatible electric plug-ins and the TRU is not operated under diesel engine power while at these facilities, except during an emergency.
 - b. Cryogenic temperature control systems or hybrid cryogenic temperature control systems, provided that the TRU does not operate under diesel engine power while at affected facilities, except during an emergency.

¹⁰ ARB and U.S. EPA will perform a technical review in 2007 to evaluate a DOC or filter-based standard for the <25 hp category in the 2010 to 2013 timeframe.

¹¹ The highest level of VEDECS that has been verified and found to be cost-effective shall be used to meet the ULETRU performance standard.

- c. Alternative-fueled engines (see definition in subsection (d)).
[Note: If the engine is not a compression ignition diesel fueled engine, this regulation would not apply, but the engine may have to meet other emission standards (e.g. large spark-ignited engine standards if >25 hp). If the engine is a CI engine, a VDECs would be required.]
- d. Fuel exclusively with an alternative diesel-fuel that has been verified as a VDECS, provided it is used in accordance with the requirements of subsection (e)(3)(B). Exclusive use of an alternative diesel fuel qualifies the TRU for exemption from the requirement to meet the highest verification classification level that has been verified for the model year.
- e. Power by fuel cells.
- f. Equip with any other system approved by the Executive Officer to not emit diesel PM or increase public health risk while at an affected facility.

(C) In-Use Compliance Dates

- (i) All 2001 and previous model year (MY) TRUs and TRU gen sets shall meet the performance criteria set forth in paragraph (e)(1)(A) for
 - a. LETRU by December 31, 2008, and
 - b. ULETRU by December 31, 2015, as shown in Tables 4 and 5.
- (ii) All 2002 MY TRUs and TRU gen sets shall meet the performance criteria set forth in paragraph (e)(1)(A) for
 - a. LETRU by December 31, 2009, and
 - b. ULETRU by December 31, 2016, as shown in Tables 4 and 5.
- (iii) All 2003, 2004, and 2005 MY TRUs and TRU gen sets shall meet the performance criteria set forth in paragraph (e)(1)(A)
 - a. LETRU by December 31st of the seventh year past the unit's model year, as shown in the Tables 4 and 5. LETRU requirements would apply unless ULETRU technologies are determined to be both available and cost-effective for a broad spectrum of TRUs and TRU gen sets at the 2009 technology review.
 - b. ULETRU by December 31, 2013, if not already meeting these standards through compliance with the paragraph immediately above.
- (iv) All 2006 MY and subsequent MY TRUs and TRU gen sets shall meet the performance criteria set forth in paragraph (e)(1)(A) for ULETRU on December 31st of the seventh year past the unit's model year, as shown in Tables 4 and 5.

**Table 4: <25 HP TRUs and TRU Gen Sets
In-Use Compliance Dates**

MY	In-Use Compliance Year ¹²													
	'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				L/U	L/U	L/U	U	U	U	U	U	U	U	U
'04					L/U	L/U	U	U	U	U	U	U	U	U
'05						L/U	U	U	U	U	U	U	U	U
'06 ¹³							U	U	U	U	U	U	U	U

**Table 5: ≥25 HP TRUs and TRU Gen Sets
In-Use Compliance Dates**

MY	In-Use Compliance Year ¹⁴													
	'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				L/U	L/U	L/U	U	U	U	U	U	U	U	U
'04					L/U	L/U	U	U	U	U	U	U	U	U
'05						L/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														

(D) Replacements Due to Failures

- (i) If a VDECS fails within its warranty period, the operator may replace it with the same VDECS or a higher verification classification level, if available.
- (ii) If a VDECS fails outside its warranty period and a higher verification classification level VDECS is available, then the operator shall upgrade to the highest level VDECS available.

¹² Compliance date is December 31st of the compliance year shown. Dark shaded areas without letter codes have no requirements, pending in-use compliance date. “L” means must meet LETRU requirements. “U” means must meet ULETRU requirements. “L/U” means LETRU requirements apply unless ULETRU technologies are determined to be both available and cost-effective for a broad spectrum of TRUs at the 2009 technology review.

¹³ <25 hp TRUs and TRU gen sets with MYs past 2006 shall be required to comply with ULETRU requirements by the end of the seventh year after the model year.

¹⁴ Compliance date is December 31st of the compliance year shown. Black shaded areas are years with no requirements since in-use compliance year precedes model year. Dark shaded areas without letter codes have no requirements, pending in-use compliance date. “L” means must meet LETRU requirements. “U” means must meet ULETRU requirements. “L/U” means LETRU requirements apply unless ULETRU technologies are determined to be both available and cost-effective for a broad spectrum of TRUs at the 2009 technology review.

(E) Labeling Requirements

[Concepts: We're trying to provide a quick and easy means of identifying equipment that is in compliance. The label could include an easy visual indication, a bar code, or a transponder used with automated equipment identification technology that computerizes compliance monitoring.]

- (i) In-Use Compliance Labels: Beginning on January 1, 2008, all TRUs and TRU gen sets that have complied with the requirements of subsection (e)(1) shall have a label permanently affixed in clear view. This label shall identify the unit as in compliance with the TRU ATCM In-Use requirements and shall indicate the compliance option chosen in paragraph (e)(1)(B). **[**Detailed label layout, location, and terminology will be added to this later.**]**
- (ii) Low Use Labels: Beginning on January 1, 2008, all TRUs and TRU gen sets that qualify as “low use” under the criteria listed in subsection (e)(4) shall have a label permanently affixed in clear view. This label shall identify the unit as “Low Use”. **[**Detailed label layout, location, and terminology will be added to this later.**]** This label is required, in addition to the requirement to keep a legible copy of the certificate in a water-tight sleeve in accordance with subsection (e)(4)(D) The “low use” exemption expires on January 1, 2011.

(F) Early Compliance with In-Use LETRU Standards

- (i) For 2002 and previous MYs, operators may elect to bring TRUs and TRU gen sets into compliance with LETRU requirements one to three years early. Early compliance would qualify these units to delay compliance with ULETRU requirements by as many full years as early compliance was achieved, rounded to the nearest year.
 - a. This extension would not be available to <25 hp TRUs if the new tier 4 engine standard for this category remains at 0.30 g/bhp-hr without a more stringent standard, based on the use of DOC or filter technologies, taking effect in the 2010 to 2013 time frame.
 - b. This extension would not be available to the operator if the engine manufacturer is using the early compliance with engine emissions standards in U.S. EPA’s Averaging, Banking, and Trading Program (or California’s equivalent program) for the engine under consideration.
 - c. No more than three years delay shall be allowed. Therefore, MY 2005 engines may qualify for early compliance with LETRU standards that take effect in 2008 and MY 2006 engines may qualify for early compliance with LETRU standards that take effect in 2009, provided engine manufacturers submit complete engine certification data and engineering arguments to ARB. The Executive Officer will approve and publish a list of qualifying engines.

- d. A partial year of early LETRU compliance would be rounded to the nearest full year for the delayed ULETRU requirements. Early LETRU compliance of 183 days or more in a calendar year would count toward a one year ULETRU delay. Early LETRU compliance of 182 days or less in a calendar year would not count toward a ULETRU delay.
- e. Examples follow:
 - 1. One full year early compliance qualifies for one full year delay in meeting ULETRU compliance.
 - 2. Two full years early compliance qualifies for two full years delay in meeting ULETRU compliance.
 - 3. Three full years early compliance qualifies for three full years delay in meeting ULETRU compliance.
- (ii) The Executive Officer may extend the in-use ULETRU compliance date for specific TRUs and TRU gen sets for early compliance with pending in-use LETRU requirements upon the operator filing an application for approval of the ULETRU delay that:
 - a. Notifies ARB of the date that early compliance with subsection (e)(1)(A) for LETRU was achieved, and
 - b. Provides documentation of how early compliance was achieved, and
 - c. Identifies the specific engine and TRU subject to early compliance by make, model, serial number, and terminal where the TRU or TRU gen set is based, and
 - d. Identifies the operator, and
 - e. Provides terminal personnel contact information.
- (iii) ARB will issue a certificate and label which acknowledges early compliance with LETRU requirements and discloses the number of years delay granted, and resulting ULETRU compliance date.
 - a. The operator shall maintain a legible copy of the certificate in a water-tight sleeve mounted inside the TRU or TRU gen set chassis housing.
 - b. The operator shall apply the label in clear view on the exterior of the chassis housing of the specific TRU or TRU gen set that was granted the compliance extension.

(2) Requirements for Facilities

[Concepts: Under this proposal, we would not require facilities complete further risk reduction steps at this time. Rather, we would require larger facilities to provide data and information. ARB would evaluate that information and then may develop a regulation that would require facilities with TRUs or TRU gen sets under facility control to do more to reduce the diesel emissions and near source risk due to TRUs. Ports, intermodal facilities, and cold storage facilities would not be included at this time, provided they have no TRUs or TRU gen sets under facility control. Subsequent phases would be adopted to require recordkeeping and reporting from “medium” and “small” facilities in a similar way.]

(A) All facilities subject to this regulation under subsection (b) shall comply with the recordkeeping and reporting requirements of subsection (f)(2)(A).

(3) Fuel Requirements:

[The concept here is to ensure that all diesel TRUs and TRU gen sets fueling in California would use CARB diesel. Other provisions in this section are designed to prevent miss-fueling of TRUs committed to using alternative diesel fueled engines as a compliance option.]

(A) Beginning on September 1, 2006, no person shall sell, offer for sale, or supply in California any fuel for TRUs and TRU gen sets that is not lawful for use, sale, or supply in California as a vehicular diesel fuel. ***[This requirement may be removed if current proposed amendments to the California Diesel Fuel Regulations are adopted as currently proposed in July, 2003 (ref. Title 13, section 2281, 2282, 2283, and Title 17 CCR, section 93114).]***

(B) Operators opting to use alternative diesel fuels in CI TRU and TRU gen set engines to comply with the requirements of subsection (e)(1) shall:

(i) Comply with recordkeeping requirements of subsection (f)(1)(B) of this regulation.

(ii) Be prohibited from using diesel fuel or CARB diesel fuel in TRUs or TRU gen sets operated in California. [ARB may need to prohibit (or limit) TRUs based out of state (or operated out of state) from using this compliance option due to the impracticality of enforcement and lack of authority over fueling out of state. Further discussion is needed.]

(iii) In the event that the operator decides to revert to using CARB diesel fuel, the operator shall comply with the requirements of subsection (e)(1) within 10 days of discontinuation of alternative diesel fuel use. Within 10 days of discontinuation, the operator shall notify the Executive Officer in writing of this change in fuel use and shall include an update to any report submitted to comply with subsection (f)(1).

- (C) Operators that retrofit TRUs or TRU gen sets with a VDECS that requires certain fuel properties to be met in order to achieve the required PM reduction or PM emissions shall only fuel the subject TRU or TRU gen set with fuel that meets these specifications when operating in the state of California. In addition, operators that choose a VDECS that requires certain fuel properties to be met in order to prevent damage to the VDEC or an increase in toxic air contaminants, other harmful compounds, or in the nature of the emitted PM shall only fuel the subject TRU or TRU gen set with fuel that meets these specifications.
 - (D) Beginning on September 1, 2006, all affected TRU and TRU gen set fuel tanks shall have a permanently affixed label in plain view near the fill spout that clearly identifies the proper fuel that is required to be used to be in compliance under the chosen pathway when operating in the State of California.
- (4) Requirements for certifying “low-use” TRUs and TRU gen sets
- (A) The operator shall equip the engine with a non-resettable hour meter.
 - (B) The operator shall annually certify to the ARB in writing by January 31st of each year the following information.
 - (i) Serial number of the TRU or TRU generator set
 - (ii) Serial number of the engine
 - (iii) Hour meter reading on December 31st of the previous year and the number of hours of engine operation in the previous calendar year.
 - (iv) Signature under penalty of perjury by the responsible official that the TRU has been equipped with the same hour meter during the last calendar year and that it has not been operated more than 80 hours in California or hauled more than 10 loads in California in the previous calendar year (whichever is less).
 - (C) ARB shall issue a certificate to the operator exempting qualifying “low use” TRUs and TRU gen sets from the requirements of this section.
 - (D) The operator shall keep a legible copy of the certificate in a water-tight sleeve mounted inside the TRU or TRU gen set chassis housing.
- (f) Monitoring, Recordkeeping, and Reporting Requirements

[The concept here is to come up with a cost-effective way to show compliance with the requirements. We understand that many carriers and facilities track the location and temperature of their goods with GPS and various types of telemetry. We believe there may be many technologies available or on the horizon that could be easily adapted to make monitoring, recordkeeping and reporting less burdensome. Operators would be required to submit an annual report. Facilities that have TRUs or TRU gen sets under facility control and which have 20 or more loading dock doors serving refrigerated areas, 20 or more employees, or

companies with more than one refrigerated facility handling refrigerated goods would be required to submit a report.]

(1) TRU and TRU gen set operator and lessor recordkeeping and reporting.

(A) Annual Reporting

- (i) Starting in 2009, all operators subject to this regulation shall submit an annual report to ARB [or designated agency] by January 31st that shall include the following information:
 - a. Company name, address, and contact information for the responsible official (phone number, email address, fax number).
 - b. List of all terminals owned or leased by the operator located within California, with address, phone number, and terminal contact name.
 - c. TRU and TRU gen set inventory information for each TRU and TRU gen set based in California:
 - 1. TRU or gen set make, model, model year, and serial number
 - 2. Engine make, model, model year, and serial number
 - 3. Terminal that the TRU is assigned to
 - 4. Other identification numbers (if applicable), *[VIN# and license plate number]*
 - d. Failure to report or submittal of false information is a violation of state law subject to civil penalty.

(B) Alternative Diesel Fuel Use and Fuel Additive Recordkeeping and Reporting.

- (i) Operators that choose a compliance pathway that involves the use of alternative-diesel fuel (e.g. B100 biodiesel fuel or ultra-low-aromatic synthetic diesel fuel) and/or fuel additive (e.g. fuel-borne catalyst) shall maintain records that document exclusive use of the chosen fuel or additive for each affected CI engine and hours of operation. Appropriate records would be copies of receipts or invoices of appropriate fuel and/or fuel additive and daily operating hour logs.
- (ii) Records shall be kept available for a minimum of two years and shall be made available to ARB inspectors [or designated agency] upon request.
- (iii) Failure to keep records or submittal of false information is a violation of state law subject to civil penalty.

(2) Facility monitoring, recordkeeping, and reporting.

- (A) All facilities subject to this subsection shall submit a report to ARB [or designated agency] by January 1, 2005, containing the following information:
- (i) Contact information for the facility's responsible official.
 - (ii) Type of distribution facility (e.g. grocery distribution, foodservice distribution, meat and poultry distribution, egg distribution, dairy product distribution, produce distribution, beer and beverage distribution, manufactured food distribution, other (specify types of goods that are shipped)).
 - (iii) The number of loading dock doors serving refrigerated storage space.
 - (iv) The number of square feet of refrigerated storage space.
 - (v) The number of full time equivalent employees working at the facility.
 - (vi) The number of TRUs or TRU gen sets under facility control by model year and horsepower category.
 - (vii) The number of reefer trucks, trailers, containers, or railcars leased or rented.
 - (viii) The total annual TRU engine operating hours for all TRUs or TRU gen sets under facility control.
 - (ix) The average weekly number of inbound reefer trucks, trailers, containers, and railcars delivering goods to the facility.
 - (x) The average weekly number of outbound reefer trucks, trailers, containers and railcars delivering goods from the facility.
 - (xi) An estimate of the average total number of hours per week that outbound TRU or TRU gen set engines operate while at the facility.
 - (xii) An estimate of the average total number of hours per week that inbound TRU or TRU gen set engines operate while at the facility.
- (B) Failure to report or submittal of false information is a violation of state law subject to civil penalty.

(g) Prohibitions

- (1) No person who is engaged in this state in the business of selling to an ultimate purchaser, or renting or leasing new or used TRUs or TRU gen sets, including, but not limited to, manufacturers, distributors, and dealers, shall intentionally or negligently import, deliver, purchase, receive, or otherwise acquire a new TRU or TRU gen set engine which is intended for use primarily in this state, for sale or resale to an ultimate purchaser who is a resident of or doing business in this state, or for registration, leasing or rental in this state, which does not meet the performance standards or that is not equipped pursuant to this section. No person shall attempt or assist in any such act.
- (2) No person who is engaged in this state in the business of selling to an ultimate purchaser or renting or leasing new TRU or TRU gen set engines, including, but not limited to, manufacturers, distributors, and dealers, shall intentionally or negligently sell, or offer to sell, to an ultimate purchaser who is a resident of or doing business in this state, or lease, offer to lease, rent, or offer to rent, in this state any new TRU or TRU gen set with a new TRU or TRU gen set engine, which is intended primarily for use or for registration in this state, and which does not meet the performance

standards or is not equipped pursuant to this section. No person shall attempt or assist in any such action.

- (3) No person shall resale for use in California any “in-use” TRU or TRU gen set greater than seven (7) years old that is not in compliance with the requirements of this section.
- (4) Operators of affected facilities and operators of affected TRUs and TRU gen sets are prohibited from taking action to divert affected TRUs to alternate staging areas in order to circumvent the requirements of this section.

NOTE: Authority cited: sections 39600 and 39601, California Health and Safety Code.
Reference: sections 39618, 39650, 39658, 39666, 40717.9, 43013, and 43018.

Staff are interested in comments relevant to all of the concepts proposed herein. This is NOT final regulatory language