

**HOW DO I COMPLY  
WITH THE  
TRU ATCM  
FOR  
OPERATORS OF TRUs AND  
TRU GENERATOR SETS,  
AND FACILITIES WHERE TRUs  
OPERATE?**



**Stationary Source Division  
Emissions Assessment Branch**

**Last Updated: January 2011**

This Page Left Intentionally Blank

**HOW DO I COMPLY  
with the  
TRU ATCM  
for  
In-Use Diesel-Fueled Transport Refrigeration Units (TRU)  
and TRU Generator Sets,  
and Facilities Where TRUs Operate?**

**TABLE OF CONTENTS**

<u>Contents</u>	<u>Page</u>
Introduction	1
Operator Requirements	2
Selling, Renting, or Leasing New or Used TRUs or TRU Gensets	2
Early Compliance Incentives	3
Ref. 1 – (obsolete)	---
Ref. 2 – FAQ and Guidelines for Compliance	4
Ref. 3 – In-Use Performance Standards	4
Ref. 4 – Registration - ARB I.D. Numbering Requirements	7
Ref. 5 – Operator Reporting	8
Ref. 6 – Early Compliance with LETRU	9
Ref. 7 – Prohibitions	10
Ref. 8 – Use of Alternative Technologies	11
Ref. 9 – Procedures for Leased and Rented TRUs	14
Ref 10 - Definitions	14
Additional Assistance	21

## **How Do I Comply with the TRU ATCM?**

### **Introduction**

This document provides guidance to parties affected by the Transport Refrigeration Unit (TRU) Airborne Toxic Control Measure (ATCM) in a "How do I Comply?" format. This guidance is based on the regulatory language of Title 13, California Code of Regulations, section 2477 (13 CCR, §2477).

The use of the term "TRU" also includes "TRU generator set", unless otherwise noted.

Flowcharts are used where space and information lends itself to this approach. The reader is directed to references (Ref.) within this document and outside this document when appropriate.

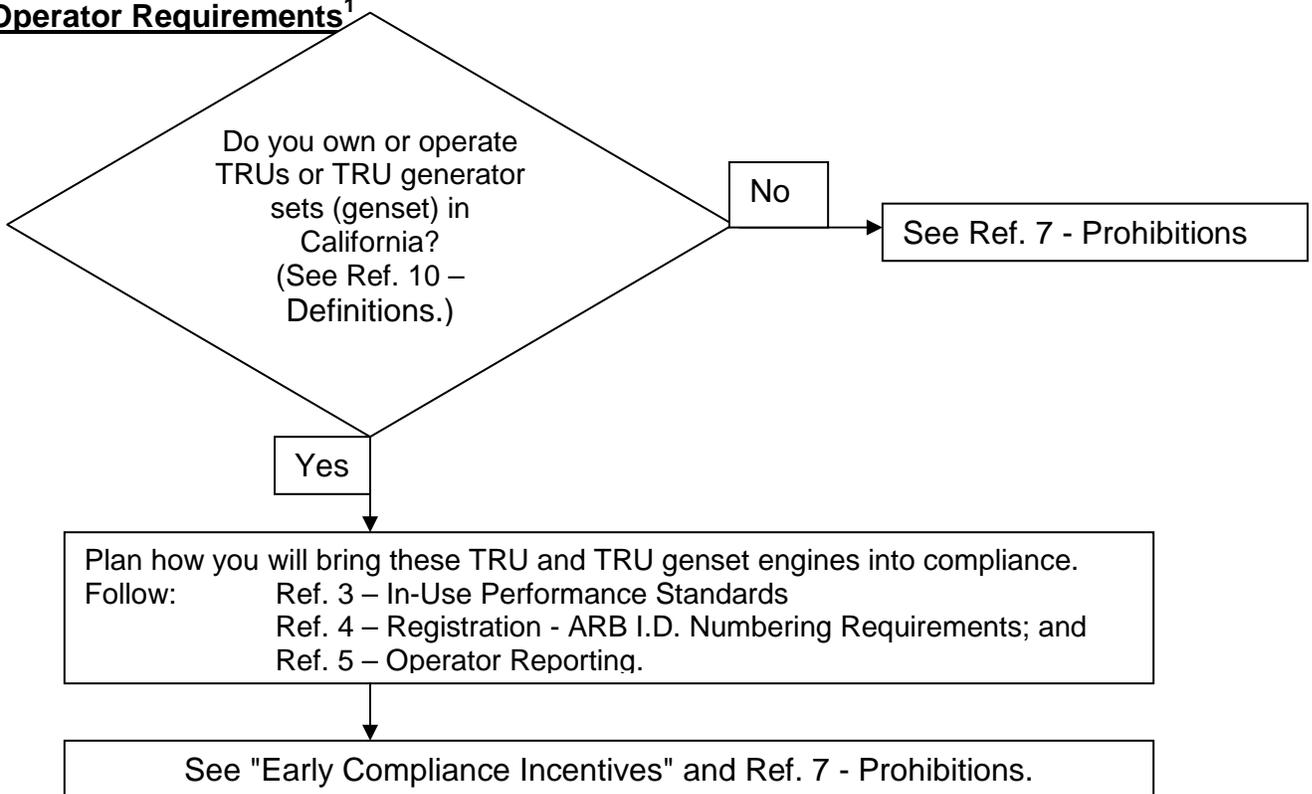
Many of the terms used in this guidance have precise meaning. For the sake of clarity, all of the definitions of 13 CCR, §2477 are included in this guidance in Ref. 10-Definitions.

If this guidance creates conflicts in interpretation, the regulatory language of the TRU ATCM, 13 CCR, §2477, shall have higher legal authority. This document may be updated from time to time with or without notice.

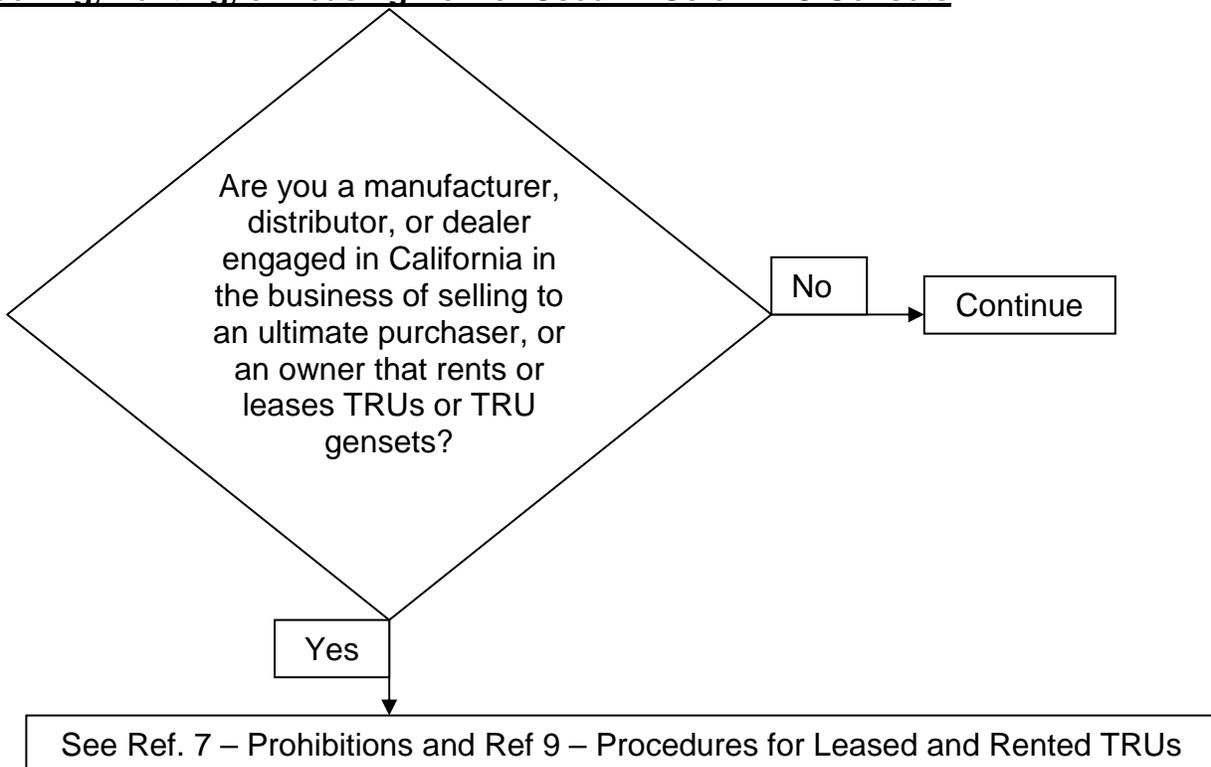
For more information about TRUs you can visit any of several ARB sites dealing with the TRU ATCM and reducing risk from diesel engines. The best place to start is the TRU web page at <http://www.arb.ca.gov/diesel/tru/tru.htm>.

To obtain a copy of the regulation, ARB staff report, and other related documents, visit our web site at <http://www.arb.ca.gov/regact/trude03/trude03.htm>.

## Operator Requirements<sup>1</sup>

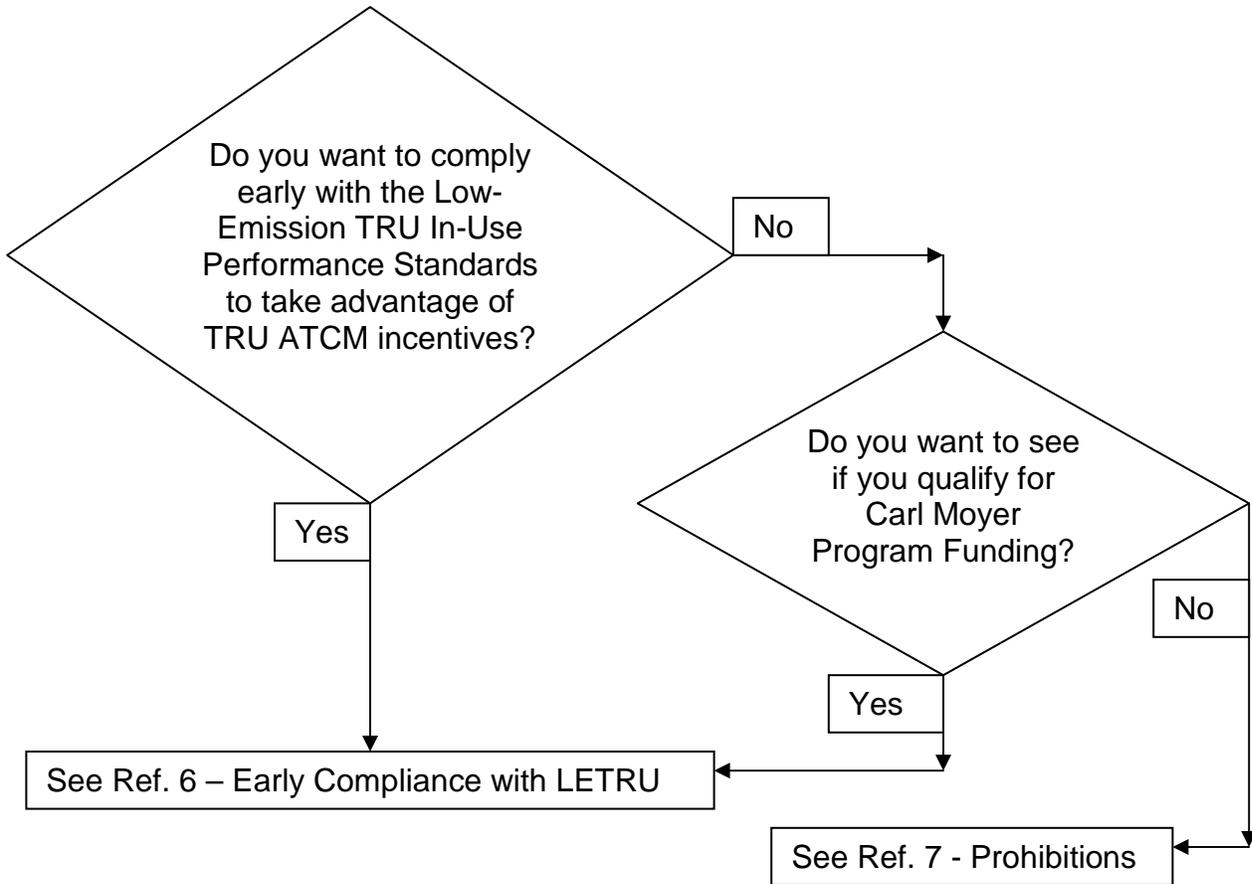


## Selling, Renting, or Leasing New or Used TRUs or TRU Gensets



<sup>1</sup> See 13 CCR 2477(e)(1) and Ref. 2 – FAQ and Guidelines for Compliance, section IV.  
Note: Military Tactical Support Equipment are exempt (see definition in Ref. 10 – Definitions).

**Early Compliance Incentives<sup>2</sup>**



Notes: "LETRU" means Low-Emission TRU In-use Performance Standard.

<sup>2</sup> Review 13 CCR, §2477(e)(1)(F) – Early Compliance with LETRU In-Use Performance Standards.

## **Ref. 2 – FAQ and Guidelines for Compliance**

Review the document titled "Frequently Asked Questions and Guidelines for Compliance with the TRU ATCM for Operators of TRUs and TRU Generator Sets, and Facilities Where TRUs Operate," which is posted on ARB's TRU web site at <http://www.arb.ca.gov/diesel/tru/tru.htm>.

## **Ref. 3 – In-Use Performance Standards<sup>3</sup>**

- a. Review your TRU engine and TRU genset engine inventory.
  1. For each TRU and TRU genset, list:
    - Engine model, model year, rated horsepower, and serial number.
  2. Group them by horsepower category (e.g. separate the less than 25 hp engines from the 25 hp and greater engines). Arrange the units to see how many of each engine model year (MY) you have.

Note: to convert from kW to horsepower, multiply the kW value by 1.341.

- b. Determine the in-use performance standard requirement(s) and due date(s) for each unit using Table 1 below:

LETRU = Low-Emission TRU in-use performance standard

ULETRU = Ultra-Low-Emission TRU in-use performance standard

**Table 1**  
**In-Use TRU and TRU Generator Set Compliance Schedule**

<b>Engine Model Year</b>	<b>Compliance Date for LETRU Standard</b>	<b>Compliance Date for ULETRU Standard</b>
2001 or older	December 31, 2008*	December 31, 2015
2002	December 31, 2009	December 31, 2016
2003	December 31, 2010	December 31, 2017
2004 (<25 hp)	December 31, 2011	December 31, 2018
2004 (≥25 hp)	Skip LETRU and meet ULETRU	December 31, 2011
2005 and Newer	Skip LETRU and meet ULETRU	December 31st of the model year + 7 years

Table 3 Notes:

\* ARB has administratively delayed the enforcement of the first phase (2001 and older) of the In-Use Performance Standards for one year (until December 31, 2009), since U.S. EPA's authorization to enforce was granted after the initial compliance deadline. See TRU Advisory 08-15 for details.

- c. For each TRU and TRU genset that must meet LETRU, look at the engine's emission control label (typically on the engine valve cover) and tabulate:
  - Engine manufacturer
  - Engine model
  - Engine family
  1. Develop an LETRU compliance strategy and capital expenditure plan for these engines. See the links on the TRU Website titled:

<sup>3</sup> Review the TRU ATCM, 13 CCR, §2477, subsections (e)(1)(A), (e)(1)(B), and (e)(1)(C).

- a. "Diesel PM Control Technology Options for Complying with TRU ATCM"
- b. "TRU ATCM Compliance Option Contacts", and
- c. "Financing Options for TRU ATCM Compliance"

In addition to considering equipment age, expected remaining life, and service history, the operator may elect to conduct a detailed inspection, measure lube oil consumption and fuel use. When are major repairs and component replacements expected to occur? Is lube oil consumption excessive? Has fuel use increased over time?

ARB encourages TRU owners to carefully evaluate operating expenses related to fuel use. Energy conservation and the savings that result from using new equipment would reduce the emissions of greenhouse gases and help to mitigate global warming, which is an urgent problem. As equipment ages, it usually becomes less efficient, unless it is carefully maintained. Truck and trailer van insulation deteriorates very quickly due to road vibrations and moisture. Door seals also deteriorate, leading to outside air intrusion into the refrigerated cold space. Anecdotal information indicates the heat load on the refrigeration system can increase by 50 percent in the first three years of service due to such deterioration. Thereafter, it gets even worse, resulting in increased TRU engine run time and fuel use to maintain the same temperature set points. Refrigerant leaks do not just have inordinately high climate change effects, they also contribute to lost refrigeration system efficiency and increased fuel use.

ARB recommends that a TRU owner's compliance plan be based on good business and environmental considerations. A change in business plans may be necessary to support the compliance plan.

LETRU compliance options include:

- i. Retrofit with a Level 2 Verified Emission Control Device (VDECS) that reduces PM emissions by at least 50 percent. Refer to ARB's Diesel Emission Control Strategies Verification web site at <http://www.arb.ca.gov/diesel/verdev/verdev.htm> to see what Level 2 VDECS are available for the TRU application and the specific engine model year (MY), model, and family. Alternatively, consult with TRU manufacturers or dealer/distributors to see what they recommend for compliance with the TRU ATCM.

Operators that choose to retrofit with a VDECS that requires certain fuel properties to be met in order to achieve the required PM emission reductions shall **only** fuel the subject TRU or TRU genset 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 VDECS or an increase in toxic emissions, other

harmful compounds, or in the nature of the emitted PM shall **only** fuel the subject TRU or TRU genset with fuel that meets these specifications.

Note: Operators may want to consider complying with ULETRU at the LETRU compliance date so that they avoid the cost of a second compliance requirement.

- ii. Replace the TRU engine with a new or newer engine. ARB believes that no in-use TRU engines' emissions meet LETRU using the engine certification approach. In-use engine testing is required to prove LETRU is being met; however, this testing is more costly than replacing the engine. Repowering with a replacement engine can maintain compliance, but only because the compliance date for the replacement engine, based on its model year, is further out in the future than the original engine. Using the engine replacement option **only** resets the compliance dates for the engine to meet the TRU In-Use Performance Standards. For example, if you elect to replace a MY 1999 engine with a MY 2007 engine, the compliance requirements would change from meeting LETRU by 12-31-08 (for the old engine) to meeting ULETRU by 12-31-14 (for the replacement engine). As Table 1 shows, the model year of the engine determines the in-use performance standard that applies and the compliance date.
  - iii. Use an Alternative Technology. See Ref. 8 – Use an Alternative Technology. Note that use of an Alternative Technology to meet LETRU would also meet ULETRU if diesel PM emissions are eliminated at distribution facilities.
  - iv. Sell the unit out-of-state or out-of-country. See Ref. 7 – Prohibitions.
  - v. Scrap the unit. (Note: Noncompliant units that are intended for scrap must be visibly disabled so that they are clearly permanently inoperative.)
- d. For each TRU and TRU genset that must meet ULETRU, look at the engine's emission control label (typically on the engine valve cover) and tabulate:  
Engine manufacturer, model, model year, and engine family.
1. Options for compliance with the ULETRU standard are similar to meeting the LETRU standard, except as follows:
    - i. Retrofit with a Level 3 VDECS that reduces PM emissions by at least 85 percent.
    - ii. Replace the TRU engine with a new or newer engine.

Note that unless the replacement engine was certified to meet a new engine standard that meets ULETRU, this may **only** reset the compliance dates for the engine to meet this In-Use Performance Standard. For example, if you elect to replace a MY 2003 engine with a MY 2009 engine, compliance requirements would go from meeting ULETRU by 12-31-10 (for the old engine) to meeting ULETRU by 12-31-16 (for the replacement engine). See Table 1 to determine the replacement engine's in-use standard compliance requirements and date. In 2013, new engine standards for off-road engines that are rated at 25 hp to less than 50 hp will be Tier 4 "final" (0.02 grams per hp-hr PM), which meets ULETRU. If a replacement engine rated at 25 hp to less than 50 hp is certified to meet the Tier 4f standard (0.02 g/hp-hr), the TRU would be in compliance with ULETRU.

- iii. Use an Alternative Technology. See Ref. 8 – Use an Alternative Technology.
- iv. Sell the unit out-of-state or out-of-country. See Ref. 7 – Prohibitions.
- v. Scrap the unit. (Note: Noncompliant units that are intended for scrap must be visibly disabled so that they are clearly permanently inoperative.)

#### **Ref. 4 – Registration - ARB Identification Numbering (IDN) Requirements<sup>4</sup>**

IDNs are mandatory for California-based TRUs and TRU generator sets. They are voluntary for TRUs that are based outside of California, but operate in California.

Only the owner of a TRU is allowed to apply for an IDN, with a few exceptions. If the owner is a lessor and the lease contract requires the lessee to register the leased equipment, then the lessor may submit a Third Party Agreement Confirmation Form for Leased Units to ARB at least 10 days prior to the lessee attempting to apply for an IDN for the lessor. See TRU Advisory 08-04 for more details. The Third Party Agreement Confirmation Form for Leased Units is available at the ARBER Forms website at: <http://www.arb.ca.gov/arber/forms.htm>

Similarly, a TRU owner may contract with a contractor or consultant to register their TRUs (apply for IDNs). The owner would need to submit a Third Party Agreement Confirmation Form for Contractors/Consultants. This form is also available at the ARBER Forms website (see above web address) and must be submitted to ARB at least 10 days prior to the contractor/consultant attempting to apply for IDNs.

---

<sup>4</sup> Review the TRU ATCM, 13 CCR, §2477, subsection (e)(1)(E).

See TRU Advisory 08-06 and the TRU Website for detailed information on registration applications for an ARB IDN at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.

IDN Applications were due at ARB by March 16, 2009. TRU owners must apply for ARB I.D. numbers within 30 days of the transfer of title date for any new or used TRUs purchased for terminal assignment in California.

Owners (lessors) and operators (lessees) that lease or rent TRUs must follow the procedures described in TRU Advisory 08-04: TRU ATCM Requirements for Leased/Rented TRUs. This advisory is available from the TRU website by clicking on the "Advisories" link in the left margin navigation bar at the TRU website at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.

### **Ref. 5 - Operator Reporting**<sup>5</sup>

Operators of California-based TRUs that are based at terminals located in California are required to submit Operator Reports to ARB. Operator reports include information about the terminal (e.g. address and contact person information) and a list of IDNs assigned to that terminal.

See the TRU Website for detailed information on submitting Operator Reports at: <http://www.arb.ca.gov/diesel/tru/tru.htm>

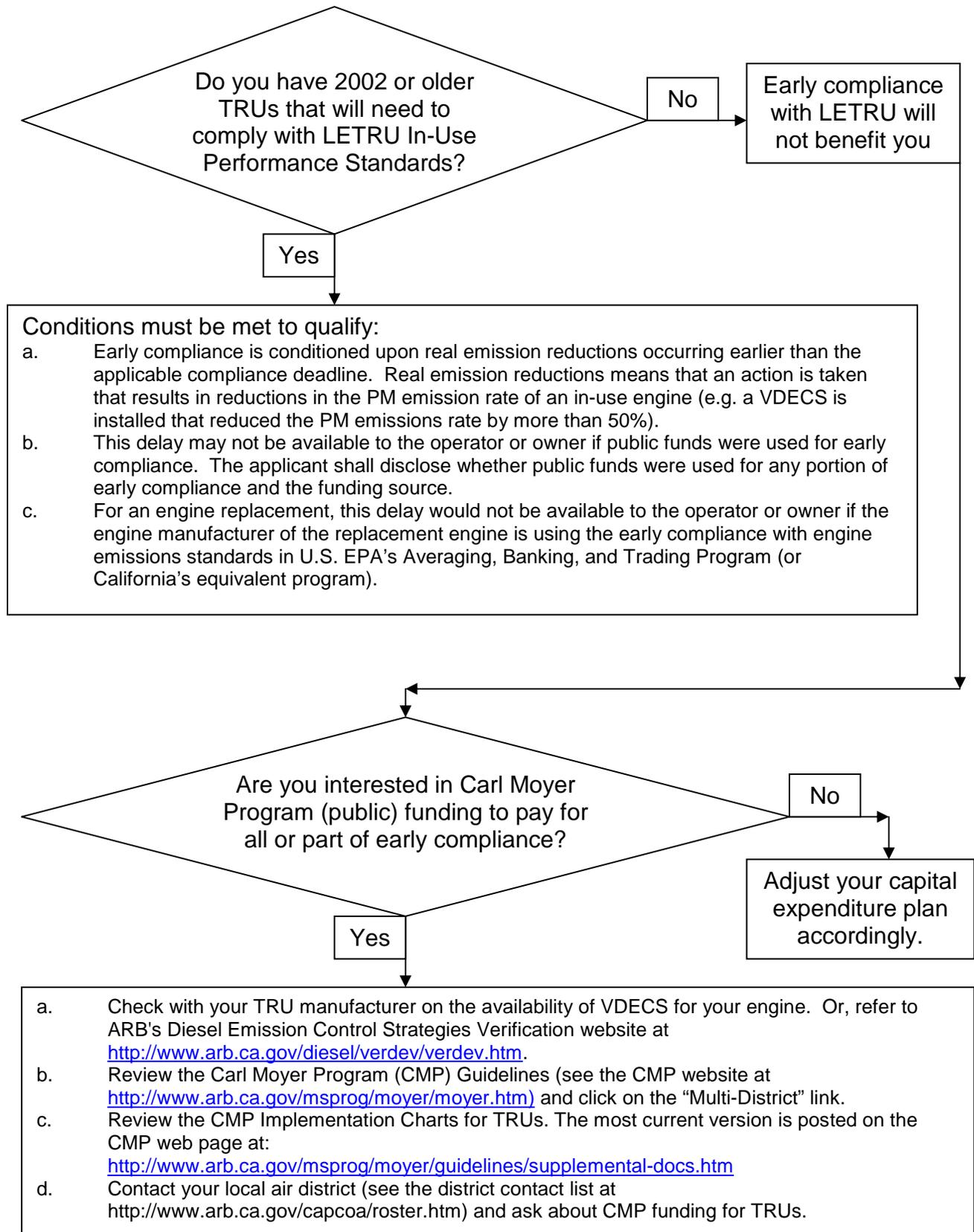
Operator Reports were due at ARB by March 16, 2009. Operators must update Operator Reports within 30 days of changes to the information in an Operator Report (e.g. contact person information or IDN assignment changes).

Owners (lessors) and operators (lessees) that lease or rent TRUs must follow the procedures described in TRU Advisory 08-04: TRU ATCM Requirements for Leased/Rented TRUs. This advisory is available from the TRU website by clicking on the "Advisories" link in the left margin navigation bar at the TRU website at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.

---

<sup>5</sup> Review the TRU ATCM, 13 CCR, §2477, subsection (f)(1).

## Ref. 6 - Early Compliance with LETRU<sup>6</sup>



<sup>6</sup> Review the TRU ATCM 13CCR, §2477, subsection (e)(1)(F), and TRU Advisory 08-12, available at the TRU webpage under the "Advisories" link in the left margin navigation bar.

## **Ref. 7 - Prohibitions**<sup>7</sup>

Once a compliance deadline passes for a TRU or TRU genset model year, it is illegal to sell, offer for sale, lease, offer to lease, rent, or offer to rent a TRU for use in California that does not meet the in-use performance standards in the ATCM. Owners still have options for dealing with noncompliant TRUs or TRU gensets.

Manufacturers, dealers, and distributors can sell, lease, or rent them outside of California, but must make every reasonable effort to ensure that the new owner is appraised that they cannot operate them in California. It is recommended that they have the new purchaser sign an acknowledgment that the unit is noncompliant for use in California and file this disclosure with sales documents.

TRU owner/operators that are not in the business of selling to an ultimate purchaser (e.g. not a TRU or TRU genset manufacturer, dealer, or distributor), or not in the business of renting, or leasing TRUs or TRU gensets, can sell noncompliant TRUs and TRU gensets. However, they should let the prospective new owner know that, as equipped when sold, the unit is noncompliant for use in California. It is recommended that they have the new purchaser sign an acknowledgment that the unit is noncompliant for use in California and file this disclosure with sales documents.

Dealers that sell TRUs or TRU gen sets from businesses located in California may purchase, receive, or otherwise acquire and have in their possession, TRUs or TRU gen sets that are noncompliant with the in-use performance standards and the registration requirements, provided the following conditions are met:

- (1) The noncompliant TRUs or TRU gen sets are not sold for use in California prior to being brought into compliance with these requirements;
- (2) The noncompliant TRU or TRU gen set is sold to a person that would not be reasonably expected to do business in California;
- (3) The noncompliant TRUs or TRU gen sets are not rented or leased prior to being brought into compliance with these requirements;
- (4) The noncompliant TRUs or TRU gen sets are not operated at the dealers place of business or on California highways for the purposes of controlling the environment of temperature sensitive products while in California.
- (5) If a noncompliant TRU or TRU gen set is to be in transit on California highways:
  - (A) The TRU or TRU gen set should not be operating;
  - (B) The dealer is responsible for ensuring that no temperature-sensitive products are transported in the vehicle;
  - (C) The dealer should provide to driver with written evidence that the noncompliant TRU or TRU gen set is under the control of the dealer, including the following information:
    1. Dealer's business name;

---

<sup>7</sup> Review 13 CCR §2477, §§(g)

2. Dealer's street address, state, zip code;
  3. Dealer contact person's name;
  4. Dealer contact person's business phone number;
  5. Date(s) transport will take place;
  6. Statement of the reason for transporting the noncompliant equipment
  7. TRU or TRU gen set serial number
  8. Physical address of starting location;
  9. Physical address of ending location; and
  10. Dealer management signature, under penalty of perjury, that all of the information is true and correct.
- (D) All circumstances at the time of inspection must be consistent with the purpose of transit, otherwise a citation shall be issued.

- (6) During transit on California highways, the driver, upon request, must show an inspector that no temperature-sensitive products are being transported, must present written evidence that the noncompliant TRU or TRU gen set is under the control of a dealer, including the following information:
- (A) Dealer's business name;
  - (B) Dealer's street address, state, zip code;
  - (C) Dealer contact person's name;
  - (D) Dealer contact person's business phone number;
  - (E) Date(s) transport will take place;
  - (F) Statement of the reason for transporting the noncompliant equipment
  - (G) TRU or TRU gen set serial number
  - (H) Physical address of starting location;
  - (I) Physical address of ending location; and
  - (J) Dealer management signature, under penalty of perjury, that all of the information is true and correct.

### **Ref. 8 – Use of Alternative Technologies<sup>8</sup>**

Alternative Technologies can be used to meet the LETRU and ULETRU In-Use Performance Standards if they qualify. In order to qualify, diesel PM emissions must be eliminated while at non-retail delivery and pick-up points and limited at retail delivery points to no more than 30 minutes. With very narrow exceptions, conventional diesel fuel shall not be used in an Alternative Technology to achieve compliance with the TRU ATCM.

Alternative Technologies are listed below, along with accompanying limitations and requirements:

- a. Electric standby. This compliance option involves the use of a diesel-powered TRU that is equipped with electric standby or hybrid-electric (the refrigeration system is driven by an electric motor). To qualify as an Alternative Technology, infrastructure and operating procedures at non-retail delivery and pick-up points (e.g. food manufacturers, shipper warehouses, cold storage warehouses,

---

<sup>8</sup> Review 13 CCR, §2477, subsections (e)(1)(A)3. and (e)(2)(A).

wholesale distribution centers) must produce zero TRU engine emissions at these facilities, with limited exceptions (e.g. during an emergency or normal yard maneuvering related to ingress and egress). In addition, TRU engine operations at retail delivery points (e.g. grocery stores, convenience stores, drug stores, restaurants, cafeterias) must be limited to no more than 30 minutes. Access to electric power plugs at non-retail facilities is necessary. Plugging in to eliminate TRU engine operation is not necessary at retail delivery points if the TRU engine run time never exceeds 30 minutes at each stop.

If a TRU owner is claiming compliance by use of an Alternative Technology, then plugging in would be required at retail delivery points to achieve compliance if the TRU engine run time would otherwise be more than 30 minutes per stop, or the subject truck or trailer is left to serve as temporary refrigerated storage. Also, subject TRU engine operations at non-retail delivery and pick-up points and retail delivery points, other than during the narrow exceptions discussed here, would be a violation, subject to fines and penalties. Records are necessary to show compliance is achieved at all non-retail and retail facilities the unit visits.

This compliance option may only work for captured fleets (e.g. fleets that load and unload only at the fleet owner's non-retail distribution facilities and then make deliveries to retail stores), where the owner can ensure the necessary electric plug infrastructure is available and all the TRU engine operations qualify as an Alternative Technology.

See TRU Advisory 08-02 for more details. This advisory is available from the TRU website by clicking on the "Advisories" link in the left margin navigation bar at the TRU website at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.

- b. Hybrid cryogenic temperature control systems. Cryogenic temperature control systems use a cryogen, such as liquid carbon dioxide or liquid nitrogen, that cools the refrigerated space. Pure cryogenic temperature control systems have no diesel engine driving a refrigeration system, so they would be exempt from the TRU ATCM. Hybrid cryogenic temperature control systems use a cryogenic temperature control system in conjunction with a conventional TRU that is powered by a TRU engine. These systems would only qualify as an Alternative Technology if the infrastructure and operating procedures at all non-retail delivery and pick-up points (e.g. food manufacturers, shipper warehouses, cold storage warehouses, wholesale distribution centers) that the unit visits produce zero TRU engine emissions at those facilities, with limited exceptions (e.g. during an emergency or normal yard maneuvering). In addition, diesel engine operation at retail delivery points (e.g. grocery stores, convenience stores, drug stores, restaurants, cafeterias) must be limited to no more than 30 minutes.

Using the cryogen would be required at retail delivery points to achieve compliance if the TRU engine run time would otherwise exceed 30 minutes per delivery point, or the truck or trailer is left to serve as temporary refrigerated storage.

TRU engine operations at non-retail delivery and pick-up points and retail delivery points, other than during these narrow exceptions, would be a violation, subject to fines and penalties. Records are necessary to show that a hybrid cryogenic temperature control system qualifies as an Alternative Technology.

This compliance option may only work for captured fleets (e.g. fleets that only visit the fleet owner's non-retail distribution facilities and then make deliveries to retail stores), where the owner can ensure all the operations of the subject TRU engine qualify as an Alternative Technology.

See TRU Advisory 08-13 for more details. This advisory is available from the TRU website by clicking on the "Advisories" link in the left margin navigation bar at the TRU website at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.

- c. Alternative fueled engines. These engines must use fuel that meets the definition of alternative fuel. See Ref. 10 – Definitions. If no conventional diesel fuel is used, the engine would be exempt from the TRU ATCM; however, spark-ignited engines using alternative fuel, rated at greater than 25 hp, must meet the large spark-ignited engine standards.

Alternative fueled compression-ignition engine retrofit systems (e.g. dual-fueled pilot-injection kits) that use conventional diesel fuel as a pilot fuel must be verified under the *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines* (California Code of Regulations title 13, section 2700 et seq).

- d. Fueled exclusively with alternative diesel-fuel. Alternative diesel fuels must be verified as a VDECS by ARB in order to be a TRU ATCM compliance option. No alternative diesel fuels have been verified as of late 2010; therefore, **alternative diesel fuels are not a valid compliance option at this time.** See TRU Advisory 08-08 and 08-14 for more details. These advisories are available from the TRU website by clicking on the "Advisories" link in the left margin navigation bar at the TRU website at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.
- e. Fuel cell-powered temperature control systems. If a reformer is used with diesel fuel as the source of hydrocarbons, then emissions must be evaluated and verified through the *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines* (13CCR section 2700 – 2710).
- f. Equipped with other systems approved by ARB to not emit diesel PM or increase public health risk near a facility. Contact ARB and provide the details of the TRU ATCM alternative technologies compliance plan (ATCP). The ATCP must assure emission reductions are real, enforceable, verifiable, and meet or exceed the TRU ATCM baseline emission reductions.

## **Ref. 9 – Procedures for Leased and Rented TRUs**

See TRU Advisory 08-04 for more details. This advisory is available from the TRU website by clicking on the “Advisories” link in the left margin navigation bar at the TRU website at: <http://www.arb.ca.gov/diesel/tru/tru.htm>.

## **Ref. 10 – Definitions** (13 CCR, §2477(d))

- (1) “Affiliate or Affiliation” refers to a relationship of direct or indirect control or shared interests between the subject business and another business.
- (2) “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.
- (3) “Alternative-Fueled Engine” means an engine that is fueled with a fuel meeting the definition of alternative fuel.
- (4) “Alternative Diesel Fuel” means any fuel used in diesel engines that is not commonly or commercially known, sold or represented as diesel fuel No. 1-D or No. 2-D, pursuant to the specification for Diesel Fuel Oils D975-81, 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 shall 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. B100 biodiesel fuel is an alternative diesel fuel.

- (7) "B100 Biodiesel-Fueled" (compression-ignition engine) means a compression-ignition engine that is fueled by B100 biodiesel 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) "California-Based TRUs and TRU Gensets" means TRUs and TRU gensets equipped on trucks, trailers, shipping containers, or railcars that a reasonable person would find to be regularly assigned to terminals within California.
- (10) "CARB Diesel Fuel" means any diesel fuel that is commonly or commercially known, sold or represented as diesel fuel No. 1-D or No. 2-D, pursuant to the specification for Diesel Fuel Oils D975-81 and meets the specifications defined in *13 CCR 2281, 13 CCR 2282, and 13 CCR 2284*.
- (11) "Carbon Monoxide (CO)" means a colorless, odorless gas resulting from the incomplete combustion of hydrocarbon fuels.
- (12) "Carrier" means any person, party, or entity who undertakes the transport of goods from one point to another.
- (13) "Certification" means the obtaining of an Executive Order for a new off-road compression-ignition engine family that complies with the off-road compression-ignition emission standards and requirements specified in the California Code of Regulations, Title 13, Section 2423. A "certified engine" is an engine that belongs to an engine family that has received a certification Executive Order.
- (14) "Certification Data" means the ARB Executive Order number and related exhaust emission data for each test cycle mode used to certify the engine family and obtain the certification level shown in the certification Executive Order. Such data includes modal exhaust emissions data for nitrogen oxides, non-methane hydrocarbons, carbon monoxide, and particulate matter includes, as a minimum, torque, engine speed, weighting factor, power, mass emission rate (grams per hour), and certification test fuel.
- (15) "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.
- (16) "Consignee" (see receiver).
- (17) "Consignor" (see shipper).

- (18) "Cryogenic Temperature Control System" means a heating and cooling system that uses a cryogen, such as liquid 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. Electrically driven fans may be used instead of a vapor motor and heating and defrost needs may be met by using electric heaters and/or vehicle engine coolant.
- (19) "Deterioration Factor (DF)" means a factor that is applied to the certification emission test data to represent emissions at the end of the useful life of the engine. Separate DFs apply to each measured pollutant, except that a combined NMHC+NOx DF applies to engines that do not use aftertreatment devices. Decreasing emissions over time would not be allowed to offset increasing emissions of the other pollutant in this combined DF.
- (20) "Diesel Fuel" means any fuel that is commonly or commercially known, sold, or represented as diesel fuel, including any mixture of primarily liquid hydrocarbons – organic compounds consisting exclusively of the elements carbon and hydrogen – that is sold or represented as suitable for use in an internal combustion, compression-ignition engine.
- (21) "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".
- (22) "Diesel Oxidation Catalyst (DOC)" means the use of a catalyst to promote the oxidation processes in diesel exhaust. Usually refers to an emission control device that includes a flow-through substrate where the surfaces that contact the exhaust flow have been catalyzed to reduce emissions of the organic fraction of diesel particulates, gas-phase hydrocarbons, and carbon monoxide.
- (23) "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.
- (24) "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.
- (25) "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.
- (26) "Emergency" means any of the following times:

- (A) A failure or loss of normal power service that is not part of an “interruptible service contract” (see definition);
  - (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 definition).
- (27) “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.
- (28) “Emissions Rate” means the weight of a pollutant emitted per unit of time (e.g., grams per second).
- (29) “Executive Officer” means the Executive Officer of the California Air Resources Board or his or her delegate.
- (30) “Facility” means any facility where TRU-equipped trucks, trailers, shipping 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 definition).
- (31) “Facility Control (of TRUs or TRU Gensets)” means the TRUs or TRU gensets located at the facility are owned or leased by the facility, its parent company, affiliate, or a subsidiary, or under contract for the purpose of providing carrier service to the facility, and the TRUs' or TRU gensets' arrival, departure, loading, unloading, shipping and/or receiving of cargo is determined by the facility, parent company, affiliate, or subsidiary (e.g scheduled receiving, dispatched shipments).
- (32) “Fischer-Tropsch Diesel Fuel” See “ultra-low-aromatic synthetic diesel fuel”.
- (33) “Fuel Additive” means any substance designed to be added to fuel or fuel systems or other engine-related engine 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 engine; or assists diesel emission control strategies in decreasing emissions, or improving fuel economy or increasing performance of the engine.
- (34) “Generator Set (genset)” means a CI engine coupled to a generator used as a source of electricity.

- (35) "Hybrid Cryogenic Temperature Control System" means a temperature control system that uses a cryogenic temperature control system in conjunction with a conventional TRU.
- (36) "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.
- (37) "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 refrigerated shipping containers and trailers to and from railcars, trucks, and ocean-going ships.
- (38) "Interruptible Service Contract" means any arrangement in which a nonresidential electrical customer agrees to reduce or consider reducing its electrical consumption during periods of peak demand or at the request of the System Operator in exchange for compensation, or assurances not to be blacked out or other similar non-monetary assurances.
- (39) "In Use TRU, TRU genset, or engine" means a TRU, TRU genset, or engine that is not a "new" TRU, TRU genset, or engine.
- (40) "Low Emission TRU (LETRU or L)" means a TRU or TRU genset that meets the performance standards described under paragraph 13 CCR, §2477(e)(1)(A)1. or (e)(1)(A)2.
- (41) "Manufacturer" means a business as defined in Government Code §14837(c).
- (42) "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.
- (43) "Model Year (MY)" means diesel-fueled engine manufacturer's annual production period, which includes January 1<sup>st</sup> of a calendar year, or if the manufacturer has no annual production period, the calendar year.
- (44) "New TRU, TRU Genset, or Engine" means any TRU, TRU genset, or engine that has never been subject to a retail sale or lease to an "ultimate purchaser" (see definition).
- (45) "Nitrogen Oxide (NOx)" means compounds of nitric oxide (NO), nitrogen dioxide (NO<sub>2</sub>), and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition.

- (46) "Non-California-Based TRUs and TRU Gensets" means TRUs and TRU gensets that are equipped on or used in trucks, trailers, shipping containers, or railcars that a reasonable person would find to be regularly assigned to terminals outside of California and operate in California from time to time for the purpose of transporting perishable goods into or out of the state.
- (47) "Non-methane Hydrocarbons (NMHC)" means the sum of all hydrocarbon air pollutants except methane. NMHCs are precursors to ozone formation.
- (48) "Operate" means to start, cause to function, program the temperature controller, select an operating program or otherwise control, fuel, monitor to assure proper operation, or keep in operation.
- (49) "Operator" means any person, party or entity that operates a TRU or TRU genset for the purposes of transporting perishable goods, excluding an employee driver and third party maintenance and repair service, and including but not limited to:
- (A) Manufacturer, producer, supplier, carrier, shipper, consignor, consignee, receiver, distribution center, or warehouse of perishable goods;
  - (B) An individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation including but not limited to, a government corporation;
  - (C) 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.
- (50) "Owner" means any person that legally holds the title (or its equivalent) showing ownership of a TRU or TRU genset, excluding a bank or other financial lending institution, and including but not limited to:
- (A) Manufacturer, producer, supplier, carrier, shipper, consignor, consignee, receiver, distribution center, warehouse;
  - (B) An individual, trust, firm, joint stock company, business concern, partnership, limited liability company, association, or corporation including but not limited to, a government corporation;
  - (C) 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.
- (51) "Owner/Operator" means a requirement applies to the owner and/or operator of a TRU or TRU genset, as determined by agreement or contract between the parties if the two are separate business entities.

- (52) "Parent Company" means a company that has a controlling interest in another company, usually through ownership of more than one-half the voting stock.
- (53) "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.
- (54) "Rated Brake Horsepower" means the power delivered, according to the statement of the engine manufacturer, at the rated speed.
- (55) "Real Emission Reductions" means that an action is taken that results in reductions in the PM emission rate of an in-use engine (e.g. a VDECS is installed that reduced the PM emissions rate by more than 50%).
- (56) "Receiver" means the person, party, or entity that receives shipped goods, cargo, or commodities.
- (57) "Refrigerated Trailer" means a trailer van, railcar, or shipping container equipped with a TRU or TRU genset. Pursuant to Health and Safety Code section 39618, refrigerated trailers are mobile sources and shall be regulated by the ARB on a statewide basis.
- (58) "Rotating Outage" means a controlled involuntary curtailment of electrical power service to consumers as ordered by the system operator - see definition.
- (59) "Shipper" means the person, party, or entity who usually owns or supplies the commodities shipped by a carrier.
- (60) "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.
- (61) "Terminal" means any place where a TRU or TRU genset equipped truck, trailer, shipping container, railcar or TRU genset is regularly garaged, maintained, operated, or dispatched from, including a dispatch office, cross-dock facility, maintenance shop, business, or private residence.
- (62) "Tier 4 Nonroad/Offroad Emission Standards" means the emission standards and associated procedures promulgated by U.S. Environmental Protection Agency in "Control of Emissions of Air Pollution from Nonroad Diesel Engines and Fuel; Final Rule" (Vol. 69, No. 124 Fed.Reg. pp. 38957-39273 (June 29, 2004)).
- (63) "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 trucks and refrigerated trailers. TRUs may be capable of both cooling and heating.

- (64) “TRU Generator Set (TRU genset)” 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 gensets that provide electricity to electrically powered refrigeration systems for semi-trailer vans and shipping containers.
- (65) “Ultimate Purchaser” means with respect to a new TRU, TRU genset, or engine, the first person who in good faith purchases a new TRU, TRU genset, or engine for purposes other than resale.
- (66) “Ultra-Low-Aromatic Synthetic Diesel Fuel” means fuel produced from natural gas, coal, or biomass by the Fischer-Tropsch gas-to-liquid chemical conversion process, or similar process that meets the following properties:

Property	ASTM	Value
Sulfur Content (ppmw)	D5453-93	<1
Total Aromatic Content (wt %)	D5186-96	<1.5%
Polynuclear Aromatic Content (wt %)	D5186-96	<0.5%
Natural Cetane Number	D613-84	>74

- (67) “Ultra-Low Emission TRU (ULETRU or U)” means a TRU or TRU genset that meets the performance standards described under 13 CCR, §2477, subparagraph (e)(1)(A)1. and (e)(1)(A)2. or that uses an “alternative technology” in accordance with 13 CCR. §2477, subparagraph (e)(1)(A)3.
- (68) “Verification Classification Level” means the classification assigned to a Diesel Emission Control Strategy by the Executive Officer 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)*. PM reductions correspond as follows: Level 1:  $\geq 25\%$ ; Level 2:  $\geq 50\%$ ; Level 3:  $\geq 85\%$  or 0.01 g/hp-hr.
- (69) “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 fuels (e.g. dual fuel), alternative diesel fuels, and combinations of the above.

### **Additional Assistance**

Call ARB’s toll-free TRU Help Line at 1-888-878-2826 (1-888-TRU-ATCM). If you require special accommodation or language needs, please call 1-888-878-2826 or email [tru@arb.ca.gov](mailto:tru@arb.ca.gov). TTY/TDD/Speech users may dial 711 for a California Relay Service.