

ISSUE: California Truck and Bus Regulation (www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm)

STATUS: The California Air Resources Board (CARB) held an adoption hearing in Sacramento, California on December 11-12, 2008. They unanimously approved regulations affecting diesel truck engines and 53-foot trailers, after a 15 hour hearing and receiving testimony from nearly 150 truck and bus interests asking to ease the regulations due to the financial turmoil and technology issues.

BACKGROUND: In 1998, CARB identified particulate matter (PM) emissions from diesel-fueled engines as a toxic air contaminant. In 2000, CARB adopted a *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* which committed the state to establish retrofit requirements for in-use diesel vehicles. In 2007, CARB adopted a *State Implementation Plan (SIP)* which further commits to the development of an “in-use” fleet rule with a goal of having the entire heavy-duty truck fleet meet the equivalent of model-year 2007 emission levels by 2014. The SIP also commits to achieving additional emission reductions beyond 2014 to meet air quality standards for ozone.

REQUIREMENTS: This regulation would affect on-road diesel vehicles greater than 14,000 pounds GVWR that operate in California regardless of where they are registered. The regulation proposes three annual compliance options over a 13-year period (2011 – 2023) for companies with one or more affected diesel vehicles operating in California (*i.e.*, a fleet).

Option #1: Best Available Control Technology (BACT) – Companies would have to either install add-on emission control devices (retrofits) or replace existing diesel vehicles with newer vehicles according to a specific model-year compliance schedule to meet PM and NOx emission control requirements. Compliance reporting would not be required.

Option #2: BACT Percentage – Companies would have to either retrofit or replace existing diesel vehicles with newer vehicles to ensure specific percentages of their fleet meet PM and NOx emission control requirements. Compliance reporting would be required.

Option #3: Fleet Averaging – Companies would have to either retrofit or replace existing diesel vehicles with newer vehicles to meet specific fleet-wide average emission targets for PM and NOx. Compliance reporting would be required.

Companies with three or fewer vehicles operating in California (“small fleets”) may choose to delay compliance until 2013 by meeting the following requirements.

- One vehicle would need to meet 2004 model-year engine emissions standards (or equivalent) and have a diesel particulate filter (DPF) installed by 2013. This vehicle would be exempt from additional requirements until 2018; and
- A second and/or third vehicle, if applicable, would need to meet the specific model-year PM and/or NOx emission control requirements contained in Option #1 by 2014. If the second vehicle has a 2010 model-year engine (or equivalent), compliance for the third vehicle could be delayed until 2016.

Credit Provisions:

- i. Companies installing DPF retrofits on pre-2007 trucks before 2010 ("early action") may delay compliance requirements for those trucks until 2014.
- ii. Each hybrid vehicle which achieves at least a 20 percent improvement in fuel economy is eligible for a double vehicle credit under Options #2 or #3 until 2018.
- iii. Vehicles with alternative fueled or pilot ignition engines are eligible to receive a credit equal to "zero" PM emissions under Option #3.

Specialty Provisions:

- a. Vehicles operating fewer than 1,000 miles and 100 hours in California each calendar year ("low-use") can be exempted subject to reporting and recordkeeping requirements.
- b. Heavy-duty vehicles operating fewer than 7,500 miles and 250 hours (if equipped with power take off) each calendar year ("NOx mileage exempt") can be exempted from the NOx requirements until 2021 subject to reporting and recordkeeping requirements. [5,000 miles and 175 hours (if equipped with power take off) for medium-duty vehicles.]
- c. Vehicles operating exclusively in the California counties which meet federal air quality standards ("NOx-exempt") can be exempted from the NOx requirements until 2021 subject to reporting and recordkeeping requirements.
- d. A fleet can annually exempt one vehicle operating in California for a single, three-day period ("three-day pass") upon receiving permission from CARB.
- e. Certain agricultural vehicles can be exempted from the requirements (a) until 2017, if operating fewer than 15,000 - 25,000 miles per calendar year, depending upon the engine's model-year ("limited-mileage") or (b) until 2023, if operating fewer than 10,000 miles per calendar year ("low-mileage") or are defined as "specialty agricultural vehicles" subject to reporting, recordkeeping and vehicle labeling requirements.
- f. Vehicles on which verified diesel emission control systems (VDECS) for PM cannot be installed can be annually granted a one-year extension until 2018 at which time they must be replaced.
- g. Vehicles on which verified diesel emission control systems (VDECS) cannot be installed due to safety considerations can be exempted from the requirements upon receiving CARB approval.
- h. Cab-over tractors which exclusively pull 57-foot trailers can be exempted from the NOx requirements until 2018 subject to reporting and recordkeeping requirements.

Companies using the BACT Percentage (Options #2) or the Fleet Averaging (Option #3) provisions would need to notify CARB of which compliance option has been selected by January 31, 2010. Compliance under these options would need to be demonstrated by January 1st with compliance reports being submitted to CARB beginning January 31, 2011 and annually thereafter. Compliance reports would need to include owner contact and vehicle/engine/retrofit information. Vehicles covered under the credit or specialty provisions would also be required to provide annual reports and, in some cases, odometer and hour meter readings or vehicle tracking information. Records would need to be retained for 3-years after a vehicle is retired or until 2025. Enforcement would be through roadside inspections and fleet/facility audits.



Driving Trucking's Success

- PM BACT: The highest level of particulate matter emission control available (50 percent minimum)
- NOx BACT: An engine manufactured to 2010 emission standards or emitting equivalent emissions

Option #1: Best Available Control Technology (BACT)

| Compliance Deadline as of January 1st | Engine Model Years | BACT Requirement |
|---------------------------------------|-----------------------|------------------|
| 2011 | Pre-1994 | PM BACT |
| 2012 | 2003 - 2004 | PM BACT |
| 2013 | 2005 - 2006 | PM BACT |
| | 1994 - 1999 | NOx and PM BACT |
| 2014 | 2000 - 2002 | NOx and PM BACT |
| | All other model years | PM BACT |
| 2015 | Pre-1994 | NOx and PM BACT |
| 2016 | 2003 - 2004 | NOx and PM BACT |
| 2017 | 2005 - 2006 | NOx and PM BACT |
| 2018 | All pre-2007 | NOx and PM BACT |
| 2019 | All pre-2007 | NOx and PM BACT |
| 2020 | All pre-2007 | NOx and PM BACT |
| 2021 | 2007 or equivalent | NOx and PM BACT |
| 2022 | 2008 | NOx and PM BACT |
| 2023 | 2009 | NOx and PM BACT |

Option #2: BACT Percentage

| Compliance Deadline as of January 1st | Percent of Total Fleet Complying with BACT | |
|---------------------------------------|--|----------|
| | PM BACT | NOx BACT |
| 2011 | 25% | NA |
| 2012 | 50% | NA |
| 2013 | 75% | 25% |
| 2014 | 100% | 50% |
| 2015 | 100% | 50% |
| 2016 | 100% | 60% |
| 2017 | 100% | 80% |
| 2018 | 100% | 80% |
| 2019 | 100% | 80% |
| 2020 | 100% | 90% |
| 2021 | 100% | 90% |
| 2022 | 100% | 90% |
| 2023 | 100% | 100% |

Option #3: Fleet Averaging

| Compliance Deadline as of January 1st | Heavy-Duty Diesel Fleet Targets | |
|---------------------------------------|---------------------------------|----------|
| | PM BACT | NOx BACT |
| 2011 | 0.71 | NA |
| 2012 | 0.53 | NA |
| 2013 | 0.32 | 14.4 |
| 2014 | 0.11 | 9.8 |
| 2015 | 0.11 | 9.8 |
| 2016 | 0.11 | 7.8 |
| 2017 | 0.11 | 6.0 |
| 2018 | 0.11 | 6.0 |
| 2019 | 0.11 | 6.0 |
| 2020 | 0.11 | 4.4 |
| 2021 | 0.11 | 4.4 |
| 2022 | 0.11 | 3.0 |
| 2023 | 0.11 | 1.6 |

Where each truck is assumed to emit:

| Engine Certification Standard Model Year | Heavy-Duty Diesel Emission Factors (grams/mile) | |
|--|---|------|
| | PM | NOx |
| Pre - 1991 | 3.36 | 22.0 |
| 1991 - 1993 | 1.25 | 22.0 |
| 1994 - 2003 | 0.81 | 22.0 |
| 2004 - 2006 | 0.81 | 12.0 |
| 2007 - 2009 | 0.11 | 7.0 |
| 2010 and newer | 0.11 | 1.6 |