

Early Credit Frequently Asked Questions In-Use Off-Road Diesel Vehicle Regulation

Update: On July 23, 2009, the Air Resources approved two new ways to get early credits under the in-use off-road diesel vehicle regulation, one for fleets that have reduced horsepower from 2006 to 2010, and another for fleets that have reduced overall activity. Fleets that receive credit under the new provisions will have reduced requirements to upgrade, retire, and retrofit vehicles. Many fleets may be able to reduce or eliminate their compliance requirements for the March 1, 2010, compliance date. These two new credits join the existing early credit provisions for early repowers, retrofits, and Tier 0 vehicle replacements, as shown below.

This is a guide to and explanation of the new credits, as well as a review of the other types of early credit available. To determine the credits and compliance options for your fleet, ARB recommends you use the fleet average calculator hosted here:

www.arb.ca.gov/msprog/ordiesel/documents/documents.htm

You eventually will need to the DOORS system to report your early credits, and the DOORS compliance planning tool is also being updated to include the new credit provisions.

Which credit is your fleet eligible for?

Has your fleet horsepower reduced from March 1, 2006?

[View more info on the Reduced Horsepower credit](#)

Are your vehicles being used less than they were in 2007?

[View more info on the Reduced Activity credit](#)

Did you replace the engine in any of your vehicles with a Tier 1 or newer engine?

[View more info on the Early Repowers credit](#)

Did you install any verified exhaust retrofits?

[View more info on Double credit for Early Retrofits](#)

Did the exhaust retrofit reduce NOx emissions as well?

[View more info on Double credit for NOx Retrofits](#)

Did you upgrade your Tier 0 vehicles at a high rate from 2006 to 2009?

[View more info on Early Tier 0 Replacements credit](#)

All of these credits must be reported either through DOORS, or the hardcopy forms, for the fleet to receive credit, and in some cases the fleet will also need to mail in records demonstrating their eligibility for the credit. For each credit this guide will detail:

- who can claim this credit,
- how can fleets apply to ARB to receive credit, and
- an example of a fleet that receives credit under that provision.

Reduced Horsepower Credit (PM and NOx)

Q - Who can claim reduced horsepower credit?

A - Any fleet that has reduced horsepower from March 1, 2006, compared to March 1, 2010, may receive credit towards PM and NOx equal to the reduction in horsepower. All fleet sizes may receive this credit, and it is applied as soon as the fleet's requirements begin (e.g. for large fleets, the credits could be used in 2010, for medium fleets in 2013, and for small fleets, the credits could be used in 2015).

Q - How can fleets apply for reduced horsepower credit?

A - Fleets that want credit for reduced horsepower must report all vehicles that were in the fleet since March 1, 2006, to ARB. If the fleet is using the online system DOORS to report, the vehicles that were sold can be included in the report. Once the fleet is reported and assigned Equipment Identification Numbers, the fleet owner can then report which vehicles are sold or retired, as described in the DOORS guide for sold vehicles here:

www.arb.ca.gov/msprog/ordiesel/documents/doors/retiredorsold.pdf

This credit does not have to be 'claimed' in any way aside from reporting all the sold vehicles.

Q - What records do I need to maintain for retired vehicles?

A - For all retired vehicles reported for credit, the fleet owner will need to keep a record of the invoice from when the vehicle was sold, or the bill of sale.

Q - What is an example of a fleet receiving reduced horsepower credit?

On March 1, 2006, a fleet owned 50 vehicles, with a total of 12,000 horsepower. From 2006 to 2010, the fleet sells off vehicles and replaces vehicles. On March 1, 2010, the fleet owns 45 vehicles, with a total horsepower of 10,500.

The fleet reports all 50 of the original vehicles, and then reports all sales, additions, and replacements that occurred since March 1, 2006.

12,000 Hp (March 1, 2006 Fleet) - 10,500 Hp (March 1, 2010 Fleet)
= 1,500 Hp Credit to PM and NOx

This means the fleet has to install retrofits on 1,500 fewer horsepower to meet the March 1, 2010, PM requirements. The 1,500 horsepower credit also meets the fleet's 2010 and 2011 NOx requirements, so the fleet does not have to replace or retire any more vehicles in that time.

Q - Are there any other provisions that affect the amount of reduced horsepower credit granted?

A - Yes, such provisions are listed below:

- Reduced horsepower credit does not expire; it lasts until used.
- It does not matter which vehicles were retired (Tier 0, Tier 3, etc.).
- The calculation of reduced horsepower credit does not take into account horsepower on any interim dates (i.e. whether the fleet was up or down in 2007, 2008, etc.).
- Vehicles that become low-use do not generate reduced horsepower credit (i.e. vehicles whose use drops below 100 hours per year still count toward fleet horsepower for the purpose of this credit).

Reduced Activity Credit (PM and NOx)

Q - Who can claim reduced activity credit?

A - Any fleet that has reduced their overall use of off-road diesel vehicles, compared to 2007 levels, may claim this credit. The total activity for all vehicles in the fleet is compared between two periods, the first is the calendar year 2007 (January 1 to December 31, 2007) and the second is the 12 month period March 1, 2009, to February 28, 2010.

When determining if a fleet can receive reduced activity credit, each fleet will need to perform the following calculation, either using the updated ARB fleet average calculator, or a similar tool.

2007 Activity = sum for each vehicle¹ (hours used in 2007 x vehicle Hp)

2010 Activity = sum for each vehicle (hours from Mar, 2009 to Mar, 2010 x vehicle Hp)

[2007 Activity – 2010 Activity] / [2007 Activity] = Percent reduction in activity

(Percent reduction x July 1, 2007 Fleet Hp) = **Credit to PM and NOx**

¹**Note** that vehicles retired for credit using the reduction of total fleet horsepower from 2006 to 2010 **cannot** be included in the calculation for 2007 activity. Additionally, this credit will only apply to the 2010 and 2011 BACT requirements, and expires after that if not used.

Q - Can I claim reduced activity credit if I do not have the hours of use for each vehicle?

A - If a fleet does not have records of vehicle hours for each vehicle, ARB will allow fleets to claim reduced activity credit based on other factors, such as overall diesel fuel use, or employment of vehicle operators, or revenue. As shown in the table below, for some records such as revenue, which do not have a close correlation with vehicle use, credit from reduced activity will be capped at 20

percent. For records such as overall diesel fuel use, the fleet may receive as much credit as they are able to demonstrate.

Records Used to Demonstrate Fleet Activity	Maximum Allowable Reduction the Fleet May Claim
Business Revenue	20 Percent
Total Employment	20 Percent
Resources/Services (tons mined, flights run, acres cleared, etc.)	20 Percent
Off-road Diesel Fuel Use	No Cap
Operating Engineer Hours Paid	No Cap

To avoid double counting, fleets that have reduced horsepower credits but do not have the hours for each vehicle must subtract from their reduced activity credit all reduced horsepower credit they received.

Fleets using these records will receive credit calculated as:

$$(\text{Percent reduction reported} \times \text{July 1, 2007 Hp}) - \text{Reduced Hp Credit} = \text{Credit to PM and NOx}$$

Q - How can fleets with hour records for each vehicle apply for reduced activity credit?

A - You will need to report hours for each vehicle in the fleet in 2007, as well as hours for each vehicle in the fleet from March 1, 2009, to March 1, 2010. This will be entered into the reporting tool DOORS in the “Claim Reduced Activity” screens. You will also have to supply copies of the hour meter logs, or a printout of any computer system used to log the hours for the vehicles in the fleet. These copies or printouts will have to be mailed to ARB to receive the credit.

Although fleets will not know the exact hours of use for March, 2009, to March 1, 2010, they will be able to enter estimates of the hours to determine what credit to expect. Fleets should be conservative in their estimates of reduced activity to avoid non-compliance on March 1, 2010. Fleets may need to use the fleet average calculators, or when available, the compliance planning tool in DOORS.

Q - How can fleets without records of vehicle hours apply for reduced activity credit?

A - In the reporting tool, DOORS, fleets will be able to enter the type of indicator they are using to demonstrate reduced activity, as well as the percent reduction in activity. Fleets will need to report all vehicles in their fleet from July, 2007, to the present. Additionally, fleets will be required to mail in copies of the forms or statements proving the reduction in activity. The types of records accepted will depend on what indicator the fleet is using to demonstrate reduced activity.

Q - What is an example of a fleet receiving reduced activity credit using hour records?

In 2007 my fleet had 100 vehicles at 200 Hp used 1,000 hours each. From March 1, 2009, to March 1, 2010, I used the same vehicles 700 hours each.

2007 activity = Vehicle 1 (200 Hp x 1,000 Hrs) + ... + Vehicle 100 (200 Hp x 1,000 hrs)
= 20,000,000 Hp-Hrs

2009 to 2010 activity = Vehicle 1 (200 Hp x 700 Hrs) + ... + Vehicle 100 (200 Hp x 700 hrs) etc. = 14, 000,000 Hp-Hrs

$(20,000,000 - 14,000,000) / (20,000,000) = 30$ percent reduction in activity

30 Percent x (100 vehicles x 200 Hp each) = **6,000 Hp credit to PM and NOx**

Q - What is an example of a fleet receiving reduced activity credit without hours for each vehicle?

A - I do not have records for each vehicle, but using my tax receipts, I know I purchased 32 percent less off-road diesel fuel from March 1, 2009 to March 1, 2010, than I did in 2007. My fleet in 2007 had 6,000 horsepower.

$(32 \text{ percent} \times 6,000 \text{ Hp}) = \mathbf{1,920 \text{ Hp Credit to NOx and PM from reduced activity}}$

The credit is not capped at 20 percent.

Q - What is an example of a fleet receiving reduced activity credit using an indicator that is capped at 20 percent?

A - I do not have records for each vehicle, but using my employee records, I know I have downsized from 100 employees in 2007 to 65 employees. My fleet in 2007 had 6,000 horsepower. Although I have a 35 percent reduction, I can only claim 20 percent because overall employment is capped at a 20 percent reduction.

$(20 \text{ percent} \times 6,000 \text{ Hp}) = \mathbf{1,200 \text{ Hp Credit to NOx and PM from reduced activity}}$

Early Repowers (NOx)

Q - Who can claim credit for early repowers?

A - Any fleet that performed a repower (a complete replacement of a vehicle's engine) of an off-road diesel vehicle to a Tier 1 or higher engine (after March 1, 2009, the repower must be to a Tier 2 engine or higher), in a vehicle which had a lower Tier engine, may claim this credit. Repowers provide credit, toward NOx BACT provisions only, equal to the horsepower of the engine replaced.

Q - How can fleets apply for credit for early repowers?

A - Report all repowers in the DOORS tool (or hardcopy forms), following this DOORS guide:
<http://www.arb.ca.gov/msprog/ordiesel/documents/doors/repowers.pdf>

Q - What is an example of a fleet receiving credit for repowers?

A - In 2004 I repowered a 350 horsepower Tier 0 vehicle with a Tier 1 engine. In 2008 I repowered a 125 horsepower Tier 1 vehicle with a Tier 2.

350 Hp + 125 Hp = **475 Hp Credit to NOx Only**

Q - Are there any other provisions that affect the amount of repower credit granted?

- After March 1, 2009, all repowers must be to Tier 2 or higher to provide credit towards the regulation requirements.
- There is no limit on how early a repower could have been done to provide credit (i.e. a repower as early as 1996 to a Tier 1 engine would provide credit).

Double Credit for All Early Retrofits (PM)

Q - Who can claim double credit for early retrofits?

A - All fleets that install ARB-verified exhaust retrofits on off-road diesel vehicles by the dates specified below for the different fleet sizes.

Large fleets: All retrofits installed prior to **January 1, 2010**, (or ordered before September 1, 2009) will provide double credit.

Medium and Small Fleets: All retrofits installed prior to **March 1, 2012** provide double credit.

Q - How can fleets apply for double retrofit credit?

A - To receive credit, fleets must report all retrofits, including the date of purchase, in DOORS. Those retrofits installed or ordered prior to the dates shown above will be granted double credit.

Q - What is an example of a fleet receiving double retrofit credit?

A - As a large fleet, in 2007 I installed a retrofit on a 100 horsepower vehicle. In November, 2009, I install another retrofit on a 150 horsepower vehicle. In February, 2010, I install a retrofit on a 300 horsepower vehicle. Note that this last retrofit was installed after the deadline for double credit, meaning the fleet receives single credit.

$(100 \text{ Hp} * 2) + (150 \text{ Hp} * 2) + 300 \text{ Hp} = 800 \text{ Hp Credit to PM Only}$

Double Credit for 'Early' NOx Retrofits (NOx)

Q - Who can claim double credit for early NOx retrofits?

A - All fleets that install retrofits verified by ARB to reduce NOx and installed by **March 1, 2011** may claim double credit, which will provide credit towards the NOx BACT requirements. For NOx retrofits, credit is calculated by dividing the percent NOx reduction achieved by 0.6¹. The result is, prior to the credit being doubled, NOx retrofits that reduce NOx emissions by 30 percent will provide 50 percent of the vehicle's horsepower as credit, NOx retrofits that reduce NOx emissions by 60 percent will provide 100 percent of the vehicle's horsepower as credit, NOx retrofits that reduce NOx emissions by 90 percent will provide 150 percent of the vehicle's horsepower as credit, etc.

For NOx retrofits installed prior to March 1, 2011, this is calculated as:

Credit = Total horsepower retrofit * (% NOx reduction / 0.6) * 2

Q - How can fleets apply for double credit for NOx retrofits?

A - To receive credit, fleets must report all retrofits, including the date of purchase, in DOORS. Those retrofits, installed prior to March 1, 2011, that reduced NOx emissions will be granted double credit towards the NOx requirements.

¹ Dividing the percent NOx reduction by 0.6, which is the equivalent of multiplying the percent reduction by 1.66, is done to convert the horsepower retrofit to a rough equivalent horsepower turned over. For a device that reduces NOx by 60%, the fleet could multiply 60 by 1.66 to get 100, meaning the fleet gets 100 percent credit for the horsepower of the vehicle, i.e., gets the same credit as if the vehicle were turned over.

Q - What is an example of a fleet receiving double credit for NOx retrofits?

A - In 2010 I install a retrofit that reduces NOx by 60 percent on a 200 horsepower vehicle, and I install another retrofit that reduces NOx by 30 percent on a 125 horsepower vehicle. All retrofits provide PM credit as previously described, however in addition to that PM credit, I receive

$$(200 \text{ Hp} \times (0.6 / 0.6) \times 2) + (125 \text{ Hp} \times (0.3 / 0.6) \times 2)$$

$$= \text{525 Hp Credit to NOx}$$

Early Replacement of T0 Credit (NOx)

Q - Who can claim credit for early Tier 0 replacement?

A - Only fleets with a high rate of turnover for Tier 0 vehicles will qualify for this credit. If a fleet replaces more than 8% of their fleet horsepower in Tier 0s annually from March 1, 2006, to March 1, 2009, they receive NOx credit in the amount exceeding 8% on average.

Tier 0 replacement credit is:

$$\begin{aligned} & [\text{Tier 0s replaced from March 1, 2006 to March 1, 2007}] - [0.08 * \text{March 1, 2007 Fleet HP}] \\ & + [\text{Tier 0s replaced from March 1, 2007 to March 1, 2008}] - [0.08 * \text{March 1, 2008 Fleet HP}] \\ & + [\text{Tier 0s replaced from March 1, 2008 to March 1, 2009}] - [0.08 * \text{March 1, 2009 Fleet HP}] \\ & = \text{T0 replacement credit} \end{aligned}$$

Note that if a Tier 0 retirement contributed to the reduction in overall fleet horsepower from 2006 to 2010, that Tier 0 retirement will not be counted toward this credit. Both the fleet average calculator and DOORS will determine this for fleets.

Q - How can fleets apply for early Tier 0 replacement credit?

A - Report all vehicles that were in the fleet since March 1, 2006, in DOORS. Once the fleet is reported and assigned EINs, the fleet can report which vehicles are sold or retired, as described in the DOORS guide for sold vehicles here: <http://www.arb.ca.gov/msprog/ordiesel/documents/doors/retiredorsold.pdf> This credit does not have to be 'claimed' in any way besides reporting all the sold vehicles. DOORS will calculate the rate of Tier 0 replacement, and provide credit where applicable.

Q - What is an example of a fleet receiving credit for early Tier 0 replacement?

A - On March 1, 2006, I had 20,000 horsepower of Tier 0 equipment. I begin replacing 2,500 horsepower per year with Tier 1 and Tier 2 vehicles, each year until March 1, 2009. This means by March 1, 2009, I had replaced 7,500 horsepower of Tier 0 equipment.

A - I subtract from 7,500 horsepower 8 percent of my horsepower on March 1, 2006, and March 1, 2007, and March 1, 2008. My horsepower throughout this time stayed constant at 20,000. My final calculation is:

$$7,500 \text{ Hp} - (0.08 \times 20,000 \text{ Hp}) - (0.08 \times 20,000 \text{ Hp}) - (0.08 \times 20,000 \text{ Hp}) = \\ = \mathbf{2,700 \text{ Hp Credit to NOx}}$$