

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

Best Available Control Technology (BACT) FAQ Revised August 2014

Q – What is BACT, and how do I comply with the fleet average requirements using BACT?

A – BACT stands for Best Available Control Technology. In the context of the Off-Road Regulation, BACT is one way of satisfying the regulation’s performance requirements. Each year, a fleet must determine if it will be able to meet the fleet average requirements in the Off-Road Regulation for the next January 1st compliance date (beginning 2014 for a large fleet, 2017 for a medium fleet, and 2019 for a small fleet). If not, it must meet BACT requirements by turning over or installing VDECS on a percentage of its total fleet horsepower (hp) that is subject to BACT requirements (section 2449.1(b)(1)). The Off-Road Regulation’s required annual BACT rates for each fleet size are as follows:

Fleet Size	Year	BACT Rate
Large (> 5,000 hp)	2014	4.8%
	2015 to 2017	8%
	2018 to 2023	10%
Medium (2,501 – 5,000 hp)	2017	8%
	2018 to 2023	10%
Small (≤ 2,500 hp)	2019 to 2028	10%

Example: For the January 1, 2014 compliance date, a large fleet with 10,000 total hp would be required to either meet the fleet average requirements or turn over (or install VDECS on) 480 hp in the twelve months prior to January 1, 2014. Turnover could consist of retiring vehicles, designating vehicles as permanent low-use, repowering vehicles with a higher tier engine, or rebuilding the engines to a more stringent emissions configuration.

DOORS automatically calculates the fleet’s required BACT amount each year and displays it in the Compliance Snapshot, a page available in the fleet’s DOORS account.

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Q – Is there an order I must follow in choosing which vehicles/engines I must perform actions on to satisfy the BACT requirements?

A – Yes; all Tier 0 and Tier 1 engines in a fleet, except those in vehicles that qualify for an exemption from the BACT requirements, must be turned over (i.e., retired, repowered, or designated as permanent low-use) before the turnover of any other higher tier engines may be counted toward the BACT requirements or toward accumulating carryover BACT credit. A fleet may, however, receive carryover BACT credit (per sections 2449.1(b)(10) and 2449.1(b)(15) in the Off-Road Regulation) for a VDECS installed on an engine, regardless of the engine's tier. For additional information on conditions that make a vehicle exempt from BACT requirements, please see the BACT Exemptions FAQ at <http://www.arb.ca.gov/msprog/ordiesel/faq/bactexemptionsfaq.pdf>.

Please note that DOORS automatically determines the engine tier for each off-road diesel vehicle based on the engine's hp and model year. You may use the table on page 1 of the Fleet Average FAQ, which is available at <http://www.arb.ca.gov/msprog/ordiesel/faq/fleetaverage.pdf>, to determine your engine tiers yourself. You may also locate the engine tier for your off-road vehicles as determined by DOORS, by logging into your DOORS account and proceeding to the "Vehicle & Engine" page.

Q – If I turn over more vehicles than required to meet my BACT requirements, do I get to use that "credit" later?

A – Yes; a fleet will accumulate carryover BACT credit each year it exceeds the BACT requirements, and accumulated carryover BACT credit may be applied to meeting the BACT requirements in a later year. The amount of carryover BACT credit used to meet the BACT requirements in any one year is subtracted from the accumulated carryover BACT credit total, with the remainder being available for use in subsequent years.

Example: *Fleet A is a large fleet with 10,000 total max hp as of December 31, 2013. The fleet had a BACT requirement of 800 hp to meet for the January 1, 2015 compliance date (8% of its total max hp). To meet its BACT requirement, the fleet retired 1,000 hp of its Tier 0 and Tier 1 vehicles and installed VDECS on 1,000 hp of its remaining vehicles, for a total of 2,000 hp in BACT credit. This left the fleet with 1,200 hp in carryover BACT credit to be used to meet the fleet's BACT requirement for January 1, 2016.*

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Q – I have electric vehicles in my fleet. Will that affect my fleet average requirements or BACT requirements?

A – Yes; electric vehicles are not included in determining fleet size, or when calculating the required hp for the BACT requirements. However, electric vehicles are accounted for in a fleet’s emissions averages. This is beneficial to a fleet, as electric vehicles have an emission factor of zero.

For more information on emission factors to use for electric vehicles, and the criteria that must be met in order for a fleet to include an electric vehicle in its off-road fleet, please see the Emission Factors FAQ, which is available in the Knowledge Center at

<http://www.arb.ca.gov/msprog/ordiesel/documents/emissionfactorsfaq.pdf>.

Q – What if I don’t meet the final fleet average target by the final compliance date?

A – After the final compliance date (January 1, 2023 for large and medium fleets and January 1, 2028 for small fleets), if a fleet does not meet the final fleet average target, they must continue to meet BACT requirements (described above) and report annually each year until they meet the final fleet average target.

Previously earned BACT carryover credit cannot be used to meet compliance requirements after the final target date. Instead, a fleet must continue to take action on 10% of their fleet each year until the final fleet average target is met. Vehicles exempt from BACT are also exempt from compliance requirements after the final target date. For additional information on conditions that make a vehicle exempt from BACT requirements, please see the BACT Exemptions FAQ, which is available in the Knowledge Center at

<http://www.arb.ca.gov/msprog/ordiesel/faq/bactexemptionsfaq.pdf>.

Q – What if a fleet met the final target with year-by-year low-use vehicles, but then brought the vehicles out of low-use after the final target date?

A – Vehicles that formerly met the year-by-year low-use definition, but whose use increases to 200 hours per year or greater must be included in the fleet average calculations by the next compliance date. If the fleet can no longer meet the final fleet average target because the low-use vehicles are now included in the fleet average, the fleet must meet BACT requirements each year until it does so.

Example: Fleet L is a large fleet who met its January 1, 2023 final fleet average target with 10 Tier 0 vehicles designated as year-by-year low-use. However, 6 of the fleet’s 10 vehicles were used over 200 hours in 2025, which brought the vehicles back into the fleet average calculations as of January 1, 2026. This

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caused the fleet's fleet average index to exceed the final fleet average target. The fleet is then required to meet a BACT rate of 10% of their fleet's total max hp, beginning January 1, 2026 and each January 1st thereafter until they again meet the January 1, 2023 final fleet average target.

Q – What are my options for meeting the performance requirements of the Off-Road Regulation?

A – To be in compliance on a compliance date, a fleet must either bring its fleet average index to, or below, the fleet average target rate or satisfy the BACT requirements. Each year, a fleet should consider what it would take to meet the fleet average target rate and if that action is more costly than complying with the BACT requirements for the next year, the fleet should comply with the BACT requirements and wait until a later year to meet the fleet average target rate.

The following are the possible ways a fleet may reduce its fleet average index and comply with the BACT requirements (listed approximately in order of increasing per vehicle cost):

- **Designate a vehicle as low-use** – If a fleet has a vehicle that it needs occasionally but not more than 200 hours per year, that vehicle would qualify for the low-use designation. When a vehicle is designated as low-use, the fleet is certifying that that vehicle has been or will be used no more than 200 hours per year (for more details on low-use designation, see also the Low-Use Provisions FAQ at <http://www.arb.ca.gov/msprog/ordiesel/faq/lowusefaq.pdf>). Vehicles permanently designated as low-use or designated as year-by-year low-use are not counted toward a fleet's fleet average index. Hence, designating lower tier (higher emitting) vehicles as low-use will lower a fleet's fleet average index and is one way to move closer to the fleet average target rate. Designating a vehicle as permanent low-use also counts toward a fleet's annual BACT requirements. For example, designating a 100 hp vehicle as permanent low-use would generate 100 hp BACT credit.
- **Retire a vehicle** – If a fleet has an older, higher tier vehicle it can do without, it may wish to consider removing that vehicle from the fleet. Selling or retiring a lower tier (higher emitting) vehicle will lower a fleet's fleet average index and move the fleet closer to the fleet average target rate. Selling or retiring a lower tier vehicle also counts toward a fleet's annual BACT requirements (all Tier 0 and Tier 1 vehicles must be turned over before the turnover of higher tier vehicles can count toward BACT requirements). For example, selling a 100 hp Tier 0 vehicle would generate 100 hp BACT credit.

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- **Repower a vehicle** – In some cases, it is possible to replace an old engine with a cleaner, lower-emitting one (i.e., to repower the vehicle). If a fleet repowers a vehicle with a Tier 0 or 1 engine with a Tier 2 or higher engine, it will move the fleet closer to the fleet average target rate and accumulate BACT credit equal to the hp of the engine removed. For example, repowering a vehicle with a 100 hp Tier 0 engine with a 100 hp Tier 2 engine would generate 100 hp BACT credit. More information on repowering off-road vehicles with on-road engines is available at <http://www.arb.ca.gov/msprog/ordiesel/guidance/onroadengineadvisory.pdf>.
- **Install a VDECS** – When a verified device is available and may be safely installed on a vehicle, retrofitting with a VDECS (typically a diesel particulate filter) may be a cost-effective compliance option. Installing VDECS will be most attractive for vehicles that are expensive to replace and are likely to be kept for a number of years. Installing VDECS moves a fleet closer to its fleet average target rate (even for VDECS that reduce particulate matter only), and accumulates BACT credit. More information on how credit for VDECS is awarded is available at http://www.arb.ca.gov/msprog/ordiesel/faq/vdecs_credit_faq.pdf.
- **Replace a vehicle** – A fleet may replace an older, higher tier vehicle with a cleaner lower tier vehicle. Removing the older vehicle from the fleet or designating it permanent low-use will count as described above under “Designate a vehicle as low-use” and “Retire a vehicle”. The replacement vehicle must meet the off-road regulation’s adding vehicles requirements (discussed further in the Adding Vehicles FAQ at <http://www.arb.ca.gov/msprog/ordiesel/faq/addingvehicles.pdf>).

Credit may also be obtained under several uncommon and more specialized ways of complying with the off-road regulation; for example, replacing diesel vehicles with electric vehicles or alternative fuel vehicles, replacing diesel vehicles with a portable or electric stationary system such as a conveyor system, or rebuilding lower tier engines to a higher tier. Refer to the regulation for detailed provisions regarding these uncommon compliance options.

ARB staff has provided several tools for helping fleets evaluate various compliance options:

- **DOORS Compliance Snapshot** – The Diesel Off-Road Online Reporting System (DOORS) Compliance Snapshot is a page inside each fleet’s DOORS account that shows where the fleet stands with regard to the next compliance date, upcoming fleet average targets and BACT requirements.

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The information contained in the Compliance Snapshot is based on the information reported by the fleet in DOORS. The Compliance Snapshot calculates a fleet's total max hp, fleet average targets, fleet average index, required BACT amounts, and BACT credits. More information on the Compliance Snapshot is available at <http://www.arb.ca.gov/msprog/ordiesel/faq/compliancesnapshotfaq.pdf>.

- **Fleet Average Calculator** – The Fleet Average Calculator is an Excel spreadsheet designed to assist fleet owners in calculating their Fleet Average Index and Fleet Average Targets based on the equipment model year and hp input. The calculator allows fleet owners to experiment with different turnover, repower, and retrofit strategies to plan for compliance. A Fleet Average Calculator User Guide is available at <http://www.arb.ca.gov/msprog/ordiesel/documents/revisedfacguide2013.pdf>.

ARB staff is continuously working to improve and expand our electronic compliance assistance tools. Fleets who would like personal help exploring compliance options are encouraged to call the DOORS hotline at 877-59DOORS (877-593-6677).

Q – How can repowering my vehicle with a newer engine or rebuilding its engine help me comply? What happens to my credits if I sell a vehicle that has been repowered?

A – A fleet can generate BACT credit by repowering a vehicle with a higher-tiered engine. For “early repowers” (i.e., repowers completed before a fleet’s initial compliance year begins), a fleet can only claim credit if it still owns the repowered vehicle (in other words, it cannot claim credit for vehicles that were repowered but sold to another fleet). “Early repowers” are those completed prior to the following dates:

- Large fleets: January 1, 2013;
- Medium fleets: January 1, 2016;
- Small fleets: January 1, 2018.

For repowers completed on or after the dates above, the credit will stay with the fleet that paid for the repower until such a time as it is claimed to meet future BACT requirements, even if the fleet subsequently sells the repowered vehicle. The buyer of the vehicle will not benefit from any of those credits but will benefit from the lower emission factor of the newer engine.

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