



Frequently Asked Questions

Fire and Emergency Vehicle Emissions Derate Exemption Customer FAQ

What is Cummins response to the Direct Final Rule (DFR) issued by EPA providing relief to emergency vehicles?

Background:

There has been concern from fire and emergency vehicle users that aftertreatment systems hamper their ability to complete missions (via engine derates and shutdowns) and cause undue hardship for this market. In May 2012 the EPA released a regulatory announcement outlining a voluntary program that provides engine manufacturers flexibility to provide relief to emergency vehicles such as ambulances and fire trucks so they would no longer face vehicle speed or engine power disruptions related to their diesel emissions control systems. Once this announcement was published to the Federal Register, the general public was allowed to submit comments within a 60 day window. Since no adverse comments were submitted to the EPA in that 60 day timeframe, the EPA issued a Direct Final Rule (DFR) on August 7, 2012

The DFR provides relief to emergency vehicles by allowing engine manufacturers to prevent the engine from loss of vehicle speed, engine power (torque) due to abnormal conditions of the emission control system or by preventing those abnormal conditions from occurring during emergency response. Examples include:

- Excessive exhaust backpressure from an overloaded Diesel Particulate Filter (DPF)
- Engines with Selective Catalytic Reduction (SCR) running out of Diesel Exhaust Fluid (DEF)

Key Message: We agree that under no condition should an emergency vehicle be shut down due to an emissions fault.

Cummins cares about its Customers

- Cummins is committed to the emergency vehicle market, which we've been in for over 70 years
- Cummins offers on-site support to customers.

- We support data based approaches and solutions and have reached out to customers inviting them to help be part of the solution by providing additional data on specific instances of real-world operational and maintenance issues.

Cummins has been and continues to actively work with the industry to address the DFR

- We have worked to be in alignment with the US Environmental Protection Agency (EPA), Engine Manufacturers Association (EMA), Fire Apparatus Manufacturers Association (FAMA).
- We have reached out to various fire service organizations (CFSI - Congressional Fire Services Institute, IAFC - International Assn of Fire Chiefs, FDSOA - Fire Dept Safety Officer's Assn, SEAFCA - Southeastern Assn of Fire Chiefs, WFCFA - Western Fire Chief's Assn), groups, and congressional offices to understand concerns and provide educational information.

Cummins has been and continues to reach out to educate on how the Cummins DPF System operates

- DPF aftertreatment systems introduced additional complexity; many and perhaps all issues can be resolved through customer understanding of how to operate and maintain the engine and aftertreatment system.
- Our engines are operating as designed and approved by EPA.
- Cummins emergency rated engines are specially designed to not shutdown or derate due to DPF loading.
- The Cummins Aftertreatment System does not affect engine and pumping performance - as long as it is properly maintained.

What is meant by ‘Inducement’ or ‘derate’ and what does it mean to me as a customer?

“Inducement” is an Environmental Protection Agency (EPA) term aimed at keeping engines which utilize Selective Catalytic Reduction (SCR) aftertreatment operating properly. An ‘inducement’ may also be referred to as an engine derate. There are three primary events that could initiate an inducement/derate: (1) Low Diesel Exhaust Fluid (DEF) level, (2) Incorrect fluid in DEF tank, and (3) SCR Faults. The driver will recognize this as a performance penalty initiated by the Electronic Control Module (ECM), resulting in a loss of vehicle speed or engine power (torque).

It is important to note that there are ample driver / operator reminders and warnings to prevent the activation of an inducement. For example, drivers will see dash lamps to remind them to add DEF and are alerted if there is incorrect fluid in the DEF tank. Some fire truck builders offer DEF level gauges on pump panels as available options.

What flexibilities are included in the Direct Final Rule issued by EPA on August 7, 2012?

Vehicle speed and engine power (torque) derates can be suspended during emergency operation. Examples include excessive exhaust back pressure from an overloaded diesel particulate filter (DPF) and running out of Diesel Exhaust Fluid (DEF).

Provision is included for both future product and modifying engines already in the field.

It is important to note that this is a voluntary program and each engine manufacturer had to submit their solutions to EPA for approval of any changes before going into production.

What is not included in the Direct Final Rule issued by EPA on August 7, 2012?

OEMs must still install aftertreatment systems for emissions control. The aftertreatment system devices and associated equipment will remain unchanged moving forward.

The belief that aftertreatment systems will be removed from fire and emergency vehicles is a common misconception within the industry.

What is Cummins position on the DFR issued by the EPA?

Cummins publically supported the DFR as stated when it was published on August 7, 2012. We have identified our solution and implemented changes to our engine software to ensure that the emissions control system does not disrupt an emergency mission.

What is Cummins solution?

Cummins has developed a new engine software specific to fire and emergency vehicle calibrations that will be incorporated into our EPA 2013 engines. This new calibration eliminates all emissions related vehicle speed or engine power (torque) derates. This includes derates associated with low level Diesel Exhaust Fluid (DEF), incorrect DEF and SCR faults that some customers may experience on EPA 2010 engines.

What engines for 2013 will include the emissions derate exemption calibration?

All EPA 2013 ISB6.7 and ISL9 EV rated engines include the new calibration that eliminates all emissions related vehicle speed and engine torque derates. Some EPA 2013 ISX12 and ISX15 engines for fire and emergency vehicles built in early 2013 may require an electronic calibration update to eliminate emissions related derates.

How do I know if my 2013 engine has the new emergency vehicle calibration update?

If you have an EPA 2013 ISB6.7 or ISL9 EV rated engine you have the new calibration already. Some ISX12 and ISX15 engines built in early 2013 may not include the new calibration and will require a calibration update that can be performed at a Cummins authorized service location. Customers can contact Cummins Care at 1-800-DIESELS™ (1-800-343-7357) with their Engine Serial Number (ESN) to determine what calibration was in the engine when it left the factory and if they are eligible for an update at no additional charge

Will all of the warning lamps still exist with the new emergency vehicle calibration?

Yes, The Diesel Exhaust Fluid (DEF) lamp, High Exhaust System Temperature (HEST) lamp and all other warning lamps will still continue to function as specified for emergency vehicle applications. The engine and aftertreatment system will still need appropriate and timely maintenance – including passive and/or active aftertreatment regenerations – as specified in the Operations and Maintenance Manual.

There is one exception to note: The new 2013 emergency vehicle calibration will eliminate the red stop engine lamp illuminating in conjunction with the DEF lamp and check engine lamp to signify critically low DEF levels.

For more information on EPA 2013 emergency vehicle warning lamps and emissions derate information please see the “EPA 2013 Driver Tips For Fire and Emergency Vehicles” brochure (Bulletin 4971424). (<http://cumminsengines.com/assets/pdf/4971424.pdf>)

Didn't the initial SCR “inducement” on EPA 2010 engines cause a derate in emergency vehicles?

Yes, however, this was changed in July-2011 through an agreement with FAMA and the EPA. A calibration update was made in July-2011 that changed the inducement/derate for SCR (low level DEF and incorrect DEF) from engine power (torque) to vehicle speed. The July-2011 calibration change is “backwards compatible” and can be obtained from any Cummins authorized service location.

For more information on EPA 2010 emergency vehicle engine derates and engines produced from January 2010 – December 2012, please see the “Driver Tips for Fire and Emergency Vehicles” brochure (Bulletin 4971316). (<http://cumminsengines.com/assets/pdf/4971316.pdf>)

Can I upfit my engine built prior to 2013 with this new calibration?

Yes, service calibrations for engines built prior to 2013 that utilize different emissions derate logic (as outlined below) are available at Cummins authorized service locations.

Is this new 2013 calibration update available at no charge for engines built prior to 2013?

No, if you have an engine built prior to 2013 you can request to have the new 2013 calibration update at a Cummins authorized service location but this will be installed at your expense.

Do I need a new engine dataplate if I receive the 2013 calibration update?

If your engine was built between Jan 1, 2010 and July 8, 2011 and you have not received the calibration update introduced on July 8, 2011 that changes the SCR inducement from an engine power (torque) derate to a vehicle speed derate you will need to obtain a new engine dataplate signifying that the engine is designed for use in fire and emergency vehicles only.

Due to the change in SCR inducements and to meet EPA requirements an engine dataplate is required signifying that the engine is designed for use in fire and emergency vehicles only.

What are the inducements/derates for Cummins engines in fire and emergency vehicles built since Jan 1, 2010?

The following table shows the inducements for EPA 2010 engines (including engines built between Jan 1 2010 and July 8, 2011), EPA 2010 engines that include the July-2011 calibration (changing the inducement from engine power/torque to vehicle speed) as well as EPA 2013 engines. Note, as discussed above, that there is a new emergency vehicle calibration for 2013 that will eliminate emissions related inducements/derates.

EPA 2010 Engines <u>BUILT BEFORE July 8, 2011</u> That have not received the Emergency Vehicle electronic calibration update		EPA 2010 Engines <u>BUILD ON/AFTER July 8, 2011</u> That have not received the Emergency Vehicle electronic calibration update		EPA 2013 Engines *Heavy Duty Exception	
DEF Tank Level	Inducement	DEF Tank Level	Inducement	DEF Tank Level	Inducement
> 10%	None	> 10%	None	> 10%	None
10%	None	10%	None	10%	None
5%	None	5%	Vehicle Speed Limited to 55 mph (pumping is still enabled)	5%	None
2.5%	25% Torque Derate				
0%	40% Torque Derate (ramped in at 1% per minute)	0%	Vehicle Speed Limited to 55 mph (pumping is still enabled)	0%	None
0%	40% Torque Derate & Vehicle Speed Limited to 5 mph And after the engine has been intentionally shut down or in the idle position for 1 hour	0%	Vehicle Speed Limited to 25 mph (pumping may be limited after key-off) And after the engine has been intentionally shut down	0%	None And after the engine has been intentionally shut down

- The first two columns illustrate the inducements that apply to EPA 2010 engines in all on-highway applications. The first two columns will also apply to emergency vehicle calibrated engines that were built before July 8, 2011 and that have not received any optional calibration available after that date only.
- The second two columns illustrate revisions made to the inducements for EPA 2010 emergency vehicle calibrated engines that were built on/after July 8, 2011 or for engines built before July 8, 2011 that have received any optional calibration upfit.
- The third two columns illustrate that there are no SCR emissions related inducements for EPA 2013 engines with the new emergency vehicle calibration for 2013. *Note: as mentioned earlier, Some EPA 2013 ISX12 and ISX15 EV engines built in early 2013 may require an electronic calibration update to eliminate emissions related derates.