
**Emergency Vehicle Rule —
SCR Maintenance and Regulatory
Flexibility for Nonroad Equipment:**

Summary and Analysis of Comments

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Assessment and Standards Division
Office of Transportation and Air Quality
U.S. Environmental Protection Agency

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Introduction

On May 23, 2012, the Administrator signed a Notice of Proposed Rulemaking (NPRM) with revisions related to emissions controls on diesel-powered emergency vehicles and revisions related to scheduled maintenance intervals for diesel engines and vehicles using Selective Catalytic Reduction (SCR). The NPRM also included revisions to offer short-term relief from performance inducements related to the emission control system, for general purpose nonroad engines while operating in temporary emergency service. Also on May 23, that NPRM was posted on EPA's web site, and a message was sent to interested stakeholders notifying them of the availability of this material for review and comment. On June 8, 2012, the NPRM was published in the *Federal Register*. EPA held a public hearing on the NPRM in Ann Arbor, Michigan on June 27, 2012. At that hearing, oral comments on the NPRM were received and recorded. The comment period officially remained open through July 27, 2012. Many comments were received during that period. A complete list of organizations and individuals that provided comments on the NPRM is contained in the table below. Abbreviations for the organization names are also included.

In parallel with the NPRM, a direct final rule (DFR) was signed on May 23, 2012, and was published on June 8. The DFR included only those portions of the NPRM that contained revisions related to emission controls on dedicated emergency vehicles. Because none of the comments on those revisions were deemed adverse, the DFR became effective on August 7, 2012.

After the close of the comment period, EPA received supplemental comments from stakeholders on the two portions of the rule not included in the DFR. We received additional comments from manufacturers regarding the proposed SCR maintenance intervals, and we received information derived from the experiences of Hurricane Sandy regarding the provisions for nonroad engines that may operate in temporary emergency service.

This Summary and Analysis of Comments contains a summary of the significant comments we received on the NPRM as well as our analysis of these comments. The reader should also refer to the final rulemaking notice in the *Federal Register*.

List of Commenters

<u>COMMENTS</u>	<u>ABBREVIATION</u>	<u>DOCKET ID NUMBER</u> (EPA-HQ-OAR-2011-)
Alliance of Automobile Manufacturers	AAM	1032-0037
Association of Global Automakers	AGA	1032-0038
Caterpillar		1032-0040
Chevron		1032-0026 and -0027
Cummins		1032-0039
Fire Apparatus Manufacturers Association	FAMA	1032-0028
General Motors	GM	1032-0036
Hazen & Sawyer		1032-0033
Joint Water Commission		1032-0029
Manufacturers of Emission Controls Association	MECA	1032-0030
National Automobile Dealers Association	NADA	1032-0041
National Truck Equipment Association	NTEA	1032-0035
Nebraska Air Quality Division	NAQD	1032-0025
Northeastern Area Association of State Foresters	NAASF	1032-0043
SCR Engine Manufacturers		1032-0042
Southeastern Association of Fire Chiefs	SEAFC	1032-0028
Southern Group of State Foresters	SGSF	1032-0031
Truck and Engine Manufacturers Association	EMA	1032-0034

List of Acronyms

µg	Microgram
µm	Micrometers
AECD	Auxiliary Emission Control Device
AEO	Annual Energy Outlook
APU	Auxiliary Power Unit
AQ	Air Quality
ARB	California Air Resources Board
ARFF	Aircraft Rescue and Fire-Fighting
bhp	Brake Horsepower
bhp-hrs	Brake Horsepower Hours
CAA	Clean Air Act
CAFE	Corporate Average Fuel Economy
CFR	Code of Federal Regulations
CO ₂	Carbon Dioxide
DEF	Diesel Exhaust Fluid
DOC	Diesel Oxidation Catalyst
DPF	Diesel Particulate Filter
DFR	Direct Final Rule
ED	Emergency Department
EEFM	Emergency Equipment Field Modification
EGR	Exhaust Gas Recirculation
EO	Executive Order
EPA	Environmental Protection Agency
EVFM	Emergency Vehicle Field Modification
FR	Federal Register
g	Gram
g/s	Gram-per-second
gal	Gallon
GHG	Greenhouse Gases
GVWR	Gross Vehicle Weight Rating
HD	Heavy-Duty
HHD	Heavy Heavy-Duty
hp	Horsepower
hrs	Hours
k	Thousand
kg	Kilogram
km	Kilometer
km/h	Kilometers per Hour
kW	Kilowatt
L	Liter
lb	Pound
LD	Light-Duty

LDT	Light-Duty Trucks
LDV	Light-Duty Vehicle
LT	Light Trucks
m ²	Square Meters
m ³	Cubic Meters
MD	Medium-Duty
MDPV	Medium-Duty Passenger Vehicles
mg	Milligram
MHD	Medium Heavy-Duty
mi	mile
min	Minute
MM	Million
mpg	Miles per Gallon
mph	Miles per Hour
MY	Model Year
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NHTSA	National Highway Traffic Safety Administration
NO ₂	Nitrogen Dioxide
NO _x	Oxides of Nitrogen
NRCI	Nonroad Compression-Ignition
NPRM	Notice of Proposed Rulemaking
O&M	Operating and Maintenance
OAQPS	Office of Air Quality Planning and Standards
OE	Original Equipment
OEM	Original Equipment Manufacturer
OTAQ	Office of Transportation and Air Quality
PM	Particulate Matter
PM ₁₀	Coarse Particulate Matter (diameter of 10 μm or less)
PM _{2.5}	Fine Particulate Matter (diameter of 2.5 μm or less)
PTO	Power Take Off
s	Second
SCR	Selective Catalytic Reduction
SO ₂	Sulfur Dioxide
SO _x	Oxides of Sulfur
Std.	Standard
SUV	Sport Utility Vehicle
SWAT	Special Weapons and Tactics
Tier 4	Clean Air Nonroad Diesel Regulations, published June 29, 2004

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CHAPTER 1: Flexibility for Emergency Vehicles

What We Proposed:

The comments in this section generally correspond to Section IV of the preamble to the proposed rule, where we describe proposed flexibilities for dedicated emergency vehicles.

1.1 Purpose and Value of the Rule; Need for the Rule

1.1.1 Need for the Rule

What Commenters Said:

“Across the United States ever since we opened this up we've got flooded by emails and different letters and phone calls of people that were having issues with these regeneration issues, so that's kind of what got us to try to get some amended rulemakings to the process to where we could actually do our business and not have to worry about someone getting hurt or killed in the process, so again, thank you for what you do and thank you for listening to us.” (SEAFCA)

“We believe that a light and buzzer strategy is much more appropriate to emergency vehicles than a strategy that limits the speed of the vehicle, or in other ways hampers its ability to perform life-saving tasks.” (FAMA)

All wildland fire suppression agencies use diesel powered dozers of various sizes to construct firebreaks in order to stop advancing wildfires. Often these firebreaks are constructed in close proximity to the wildfire. Numerous injuries and fatalities of wildland firefighters have occurred when dozers became disabled due to terrain such as becoming stuck or various mechanical reasons, while constructing firebreaks in front of advancing wildfires. It would obviously be extremely dangerous to have dozers with emission control systems or settings that could lead to dozers losing power, speed, or torque while constructing firebreaks in advance of an oncoming wildfire. (SGSF)

“EMA supports the emergency vehicle revisions proposed in the DFR and believes that they will enable emergency vehicles to perform their critical life-saving work without risk of incurring certain non-routine emission control system conditions that can result in decreased engine power, speed, or torque. By excluding certain AECDs designed to avert this situation from the definition of “defeat device,” EPA is taking important steps to prevent the unacceptable scenario where an emergency vehicle is not able to properly respond to an emergency solely because of the timing of a regeneration event or the need for a DEF refill.” (EMA)

Commenters:

Keith Brown/SEAFCA (0028)

Roger Lackore/FAMA (0028)

Linda Casey/Southern Group of State Foresters (0031)

Jed Mandel/EMA (0034)

1.1.2 Support for the rule

What Commenters Said:

“FAMA supports the actions of the EPA to provide flexibility with regard to the emissions certification of compression-ignition engines in emergency vehicles. Our support extends to all aspects of the Direct Final Rule, and the Notice of Proposed Rulemaking affecting diesel particulate filter operation . . . FAMA also supports the intent to relax the inducement strategies related to the diesel exhaust fluid.” (FAMA)

MECA supports EPA’s proposal to amend its heavy-duty diesel engine programs to specifically allow engine manufacturers to request to deploy specific emission controls or settings for new and in-use engines that are sold for use only in emergency vehicles. (MECA)

The Alliance of Automobile Manufacturers supports adoption of the “Heavy-duty Highway Program: Revisions for Emergency Vehicles” DFR published June 8, 2012. The allowances contained in the DFR will provide significant relief to emergency vehicle operators that currently must contend with potential loss of vehicle performance while executing critical emergency relief operations. Simultaneously, it provides vehicle manufacturers with a clear regulatory pathway for introducing enabling technologies. (AAM)

EMA supports EPA’s efforts to take immediate action to avoid potential power loss on emergency vehicles related to normal engine regeneration operation during emergency situations. (EMA)

“The SGSF supports the actions taken by EPA related to the revision of heavy-duty diesel regulations for emergency vehicles and equipment.” (SGSF)

“We agree with EPA’s assertion that additional flexibility for manufacturers to enable more passive and automatic active regenerations would help to improve reliability by preventing the need for inadvertent regeneration during emergency vehicle operations. The extended idling periods that can be experienced by ambulances during ‘ready status’ and/or short drive durations have previously resulted in high rate of buildup of soot in DPFs which have led to vehicles requiring dedicated regeneration periods to clean the filters and in some cases, exhaust service at a dealership. Providing additional flexibility to engine/chassis manufacturers to create an appropriate strategy of active/passive and manual/automatic regeneration for emergency vehicles, while consequently not counting the resulting increase in NOX emissions that may be associated with it against their certification will help prevent similar issues in the future.” (NTEA/AMD)

“Cummins supports the direct final rule and notice of proposed rulemaking EPA published to allow regulatory flexibility for emergency vehicles against abnormal conditions that would prevent the loss of speed, torque, or power. We agree with EPA that it is important to prevent these conditions from occurring during emergency operation of dedicated emergency vehicles in order to ensure the public’s health and safety.” (Cummins)

“Since performance or control compromises may pose real public safety risks for in-use emergency vehicles, NADA/ATD generally supports EPA’s Auxiliary Emission Control Device

and Emergency Vehicle Field Modification proposals for diesel-equipped fire fighting vehicles and ambulances.” (NADA)

NAASF supports EPA’s direct rule revising its heavy-duty diesel regulations to enable emergency vehicles, particularly those used in wildfire suppression, to perform without risking decreased engine power, speed or torque during emergency wildfire activities. (NAASF)

Commenters:

Roger Lackore/FAMA (0028)
Jamie Song/MECA (0030)
Linda Casey/Southern Group of State Foresters (0031)
Jed Mandel/EMA (0034)
Mike Kastner/NTEA/AMD (0035)
Giedrius Ambrozaitis/AAM (0037)
Robert Jorgensen/Cummins (0039)
Douglas Greenhaus/NADA (0041)
Christopher Martin/Northeast Area Association of State Foresters (0043)

Our Response:

We agree that it would not be acceptable for emission controls to interfere with the operation of emergency vehicles. As described later in this document as well as the preamble to the Final Rule, we believe that the provisions being adopted will address this concern.

1.2 Scope and Applicability of the Rule

1.2.1 Definition of Emergency Vehicle for On-Road Vehicles

We proposed to consider only fire trucks and ambulances to be “emergency vehicles” for purposes of these emergency vehicle provisions.

(A) Expand to Include Broader Range of Vehicles

What Commenters Said:

The only aspect of the Direct Final Rule where we have recommendations to make concerns the Agency's definition of ambulance and fire truck. We feel that these definitions may preclude other specialty emergency vehicles with similar duty cycles, such as rescue trucks, command and communication apparatus, SWAT vehicles, or other vocational vehicles used for emergency response, but that are not directly associated with either fire suppression or patient transport. Therefore, FAMA proposes to replace the definitions of the fire truck and ambulance with a general definition of emergency vehicle as follows: “Emergency vehicle: a vocational vehicle or other mobile equipment designed to be used under emergency conditions such as fire suppression, patient transport, police activity, or homeland security operations.” We believe this broader definition will encompass the range of vehicles susceptible to the problem this rulemaking is intended to address. (FAMA)

The Alliance recommends that the DFR’s definition of “emergency vehicle” be broadened to include law enforcement, ambulances and ambulance-hearse combinations, fire suppression, search and rescue and other emergency vehicle types. If broadened as described, this definition could also serve to replace the potentially conflicting definition proposed by EPA at 40 CFR 86.1818-12. (76 Fed. Reg. 75362, Dec. 1, 2011) (AAM)

Commenters:

Roger Lackore/FAMA (0028)
Giedrius Ambrozaitis/AAM (0037)

(B) Retain Proposed Definition Without Expanding to Include Other Vehicles

What Commenters Said:

MECA also believes that EPA should tightly define the range and scope of emergency vehicles that can employ emission system modifications to ensure that any relief is implemented on a relatively small number of vehicles. (MECA)

“The proposed definitions of emergency vehicle, emergency equipment, ambulance, and fire truck are appropriate. It is appreciated that the proposed language for ambulance and fire truck definitions align with definitions already established by these respective industries. By using industry established emergency vehicle definitions, confusion over how and when to apply these proposed regulations can be avoided. Cummins also agrees with EPA on defining emergency vehicle as only ambulances and fire trucks and emergency equipment as only aircraft rescue and fire-fighting (ARFF) vehicles and wildland fire apparatus. By limiting the proposed flexibilities to only this specific equipment that will directly respond in emergency situations, the possibility of abusing this flexibility is limited and the impact to the environment is minimized without jeopardizing the public’s health or safety.” (Cummins)

Commenters:

Jamie Song/MECA (0030)
Robert Jorgensen/Cummins (0039)

Our Response:

EPA has received no information with specific examples of vehicles in use having reduced performance due to the emission control system, where the vehicle was not either an ambulance, fire truck, or dedicated emergency equipment under our current definitions. While we agree with commenters MECA and Cummins that a narrow definition of emergency vehicle is generally appropriate, EPA has considered whether there may be other types of dedicated emergency, rescue or police vehicles for which the flexibilities of this rule may be warranted. To address this, we have added a provision to the definition of emergency vehicle at 40 CFR 86.1803-01 to allow manufacturers to apply to EPA to receive this flexibility for additional vehicles if we determine they will likely be regularly used in emergency situations where emission control function or malfunction may cause a significant risk to human life. This added

provision allows engine manufacturers to submit applications for AECD's (associated with new certifications) and EVFM's (field modifications) for review on a case-by-case basis by EPA. These procedures are described in the preamble to the rule at Section V.A.

Below in Section 1.4.2, EPA addresses AAM's comment regarding a potential conflict between the definition of emergency vehicle at 40 CFR 86.1818-12 and the definition at 40 CFR 86.1803-01, adopted in the direct final rule (77 FR 34130).

1.2.2 Definition of Emergency Equipment for Nonroad Equipment

We proposed to include two types of vehicles as "emergency equipment":

- (1) Specialized vehicles used to perform aircraft rescue and fire-fighting functions at airports, with particular emphasis on saving lives and reducing injuries coincident with aircraft fires following impact or aircraft ground fires.
- (2) Wildland fire apparatus, which includes any apparatus equipped with a slip-on fire-fighting module, designed primarily to support wildland fire suppression operations. Expand to Include Other Wildland Fire Suppression Equipment

What Commenters Said:

(A) Expand to Include Broader Range of Vehicles

The SGSF notes that in this direct final rule EPA includes wildland fire apparatus in the definition of emergency equipment. The SGSF asks that EPA specifically include wildfire suppression dozers, dozer transport trucks, wildland fire engines and other wildland fire apparatus in the definition of emergency equipment. Wildland fire suppression agencies also use diesel powered trucks to transport wildfire suppression dozers to and from the scene of wildfires as well as diesel powered wildland engines to pump water or other suppressants onto wildfires. Use of emission control systems or settings that could lead to these dozer transports or wildland engines losing power, speed, or torque while en route to or suppressing a wildfire would interfere with the critical mission of wildland fire suppression agencies. (SGSF)

NAASF supports the comments submitted by the Southern Group of State Foresters in amending the definition of emergency equipment by replacing "wildland fire apparatus" with "wildfire suppression dozers, dozer transport trucks, wildland fire engines and other wildland fire apparatus." Diesel-powered trucks are also used to transport wildfire suppression dozers to and from the scene of wildfires, and diesel-powered engines are used to pump water or other suppressants onto wildfires. It is equally important to ensure that the use of emission control systems or settings in these engines do not increase the probability of losing power, speed, or torque while en route to or suppressing a wildfire. (NAASF)

Commenters:

Linda Casey/Southern Group of State Foresters (0031)
Christopher Martin/Northeast Area Association of State Foresters (0043)

(B) Retain Proposed Definition Without Expanding to Include Other Equipment

What Commenters Said:

“The proposed definitions of emergency vehicle, emergency equipment, ambulance, and fire truck are appropriate. It is appreciated that the proposed language for ambulance and fire truck definitions align with definitions already established by these respective industries. By using industry established emergency vehicle definitions, confusion over how and when to apply these proposed regulations can be avoided. Cummins also agrees with EPA on defining emergency vehicle as only ambulances and fire trucks and emergency equipment as only aircraft rescue and fire-fighting (ARFF) vehicles and wildland fire apparatus. By limiting the proposed flexibilities to only this specific equipment that will directly respond in emergency situations, the possibility of abusing this flexibility is limited and the impact to the environment is minimized without jeopardizing the public’s health or safety.” (Cummins)

Commenter:

Robert Jorgensen/Cummins (0039)

Our Response:

EPA has received no information with examples of any in-use nonroad dedicated emergency equipment having reduced performance due to the emission control system. We adopted these provisions as a precaution in the event that regulatory flexibilities are needed in the future. We continue to believe that a narrow definition of emergency equipment is appropriate. Further, EPA has considered whether our current definition may inadvertently cover some general purpose vehicles or equipment, as well as whether there may be other types of equipment for which the flexibilities of this rule may be warranted. Both the SGSF and NAASF request inclusion of wildfire suppression dozers, dozer transport trucks, wildland fire engines and other wildland fire apparatus in our definition of emergency equipment. Under our definition of *emergency equipment* at 40 CFR 1039.801, it was our intent to cover specialized equipment such as wildfire suppression dozers, and in this action we are revising the definition to more clearly cover them. To the extent any wildland fire engines and other wildland fire apparatus are registered as motor vehicles, they are included in our definition of *emergency vehicle* (See Section 1.2.1, above) and covered by the provisions of 40 CFR part 86. We do not believe that dozer transport trucks that are not specialized for emergency service would be included in the definitions of either *emergency vehicle* or *emergency equipment*. In this action, we are revising the definition of *emergency equipment* at part 1039 to clarify what engines we intended to cover and exclude.

To the extent there are other types of nonroad equipment in regular emergency service that may be identified in the future as needing these flexibilities, we are adding provisions at 40 CFR 1039.801 allowing for engine manufacturers to submit applications for AECD’s (associated with new certifications) and EEFM’s (field modifications) for review on a case-by-case basis by EPA. These procedures are described in the preamble to the rule at Section V.B.

In response to the comment suggesting EPA should avoid any loss of performance on diesel-powered engines that are used to pump water or other suppressants onto wildfires, we agree. To the extent these engines are in dedicated emergency service and are not fixed in one location for longer than 12 months, we expect they would be covered under the newly revised definition of *emergency equipment*. See further explanation in EPA’s response to comments 1.2.2 (C) and (D) below.

(C) Expand to Include Engines for Fire Pumps

What Commenters Said:

I notice there is no mention of diesel engines for fire pumps (either fixed or portable). These too are also mission critical.

Commenters:

Lindsay Hamilton/Chevron (0026/0027)

(D) Application to Engines for Stationary Emergency Power Generation

What Commenters Said:

In §1039, you added language for “emergency equipment” in reference to emergency response equipment. This could be confused with emergency engines that are subject to NSPS Subpart IIII (40 CFR 60), which reference 40 CFR 1039. The emergency engines used in NSPS are for emergency power at stationary sources. Suggest you change “emergency equipment” to “emergency response equipment” for clarification. (Nebraska AQD)

“Currently, a Compression Ignition engine-driven electric generator set (‘gen-set’) that serves both an emergency and non-emergency function must use a certified non-emergency engine. The certified engine configuration must induce the operator to repair emissions related malfunctions; this is achieved with gen-sets by an automatic forced shutdown of the engine. However, during an emergency situation, when normal power is interrupted, a forced shutdown (inducement) of the gen-set will be unacceptable for some applications and/or some circumstances. . . . Therefore, we suggest the definition of “emergency situation” (for gen-sets) proposed in 40 C.F.R. § 1039.665 align with “emergency stationary internal combustion engine” definition set forth in 40 C.F.R. § 60.4219 when the normal power source is interrupted. This would facilitate the use of an SCR inducement override when operating certified non-emergency gen-set engines in emergency gen-set applications. With the override, gen-sets can continue to run in the event of normal power source interruption and faults within the aftertreatment system.” (Joint Water Commission)

Commenters:

Stephenie Moyer/Nebraska Air Quality Division (0025)
Tyler Wubbena/Joint Water Commission (0029)

Our Response:

The application of this rule to general purpose nonroad engines used in temporary emergency situations is addressed in Section 3.2, below in this document. However, because these comments touch on the issue of the definition of emergency equipment, we are providing a response here.

The final definition of “emergency equipment” allows EPA to classify some portable gen-sets as emergency equipment, where the manufacturer demonstrates that they will regularly be used in emergency situations where emission control function or malfunction may cause a significant risk to human life. In making such a determination, we would consider all relevant factors that affect on the totality of the actual risk to human life. For example, we may consider how frequently the equipment will be used in emergency situations or how likely it is that the emission controls will cause a significant risk to human life when the equipment is used in emergency situations. We would also consider to what extent the flexibility provisions of §1039.665 already address the risk.

It is also important to note that we believe that many emergency gen-sets would be considered to be stationary engines as defined in 40 CFR 1068.30. As such, they would be outside the scope of this rule. This rule was proposed solely as a revision to the regulations for nonroad engines, which previously had no special provisions for dedicated emergency engines or non-dedicated engines used in emergency circumstances. It was not intended to create any changes to the existing regulations for stationary engines. Stationary engines are subject to different statutory provisions and any revision to the provisions for such engines would need to be made consistent with those statutory provisions. In addition, the pre-existing regulations for stationary engines already contain provisions for emergency engines that do not require aftertreatment-forcing standards for such engines. These provisions were promulgated over several rulemakings under the statutory sections applicable to stationary engines. Any changes to the treatment of stationary engines would need to be done under those statutory sections in the context of a rule regulating stationary engines.

1.3 Certification & Approvals of AECD’s, EVFM’s and EEFM’s for New and Existing Engines/Vehicles/Equipment

1.3.1 Degree of Relief Offered

What Commenters Said:

While these provisions do offer limited relief from the latest emission standards for these engines, PM emissions reductions from these emergency vehicles may still be achieved through the general requirement that the use of engines must meet the most stringent and practical emission standards. (MECA)

Cummins would like to encourage EPA when approving any Auxiliary Emission Control Devices (AECDs), Emergency Vehicle Field Modifications (EVFMs), or Emergency Equipment Field Modifications (EEFMs) to only approve approaches that utilize a minimum strategy. In other words, Cummins would like to see only AECDs, EVFMs, or EEFMs that only change the

engine from its normal operation only as much as needed to avoid the loss of speed, torque or power. This minimum strategy approach ensures that vehicles can still respond as needed while creating only the smallest environmental impact. (Cummins)

Additionally, NTEA and AMD agree with provisions for a “failsafe measure” that could be employed to prevent engine exhaust backpressure from limiting engine speed, torque or power or causing engine shutdown. We understand that this would be a temporary operation where the pressure relief function would be suspended when the back pressure returns to its intended range and do not see a need for further provisions beyond this. (NTEA/AMD)

Commenters:

Jamie Song/MECA (0030)
Robert Jorgensen/Cummins (0039)
Mike Kastner/NTEA/AMD (0035)

Our Response:

We recognize the concerns expressed by the commenters and are committed to ensuring that manufacturers apply good engineering judgment to prevent unnecessary emissions.

1.3.2 Timing of Certification Process

What Commenters Said:

In order to ensure that emergency vehicles already in service perform properly in emergency situations, it may be necessary to implement an EVFM. As set forth in the DFR, prior to distributing or installing an EVFM the manufacturer must (i) notify EPA in writing of its intent to install or distribute the EVFM and (ii) include with such notification a full description of the EVFM and documentation supporting the determination that the EVFM is necessary to prevent the emergency vehicle from losing speed, torque, or power due to abnormal conditions of its emission control system (or to prevent such abnormal conditions from occurring during operation related to an emergency response). In those cases where an EVFM may not be installed or distributed without EPA’s prior approval, it is crucial that EPA review and approve such an EVFM in a timely manner. In the event a manufacturer proposes an EVFM that is not comparable to a previously approved EVFM, the DFR requires the manufacturer to obtain EPA’s prior approval before such EVFM is installed or distributed. See §85.1716(c)(3). However, the DFR fails to ensure EPA’s timely response to such requests. It must in order to meet EPA’s stated public safety objectives. The proposed regulatory language fails to (i) include any requirement that EPA request such additional information in a timely manner or (ii) require EPA to provide a timely, or even any, response acknowledging the receipt of such requested additional information. While §85.1716(c)(3)(iii) provides that such a proposed new EVFM is deemed approved 30 days after EPA acknowledges that the manufacturer has provided EPA with all requested additional information, the failure to establish a timeframe within which EPA must request such information or acknowledge the receipt of such information is a glaring omission that must be addressed. Accordingly, the regulatory text must be revised to require EPA to request additional information with respect to an EVFM not used previously in an approved

application in a timely manner. If EPA fails to request additional information with respect to such new EVFM within 30 days after the manufacturer submits its application, the EVFM should be deemed approved. Similarly, in the event EPA requests additional information within the 30 day timeframe, the EVFM should be deemed approved 30 days after EPA receives the requested additional information unless EPA notifies the manufacturer otherwise.

Commenters:

Jed Mandel/EMA (0034)
Robert Jorgensen/Cummins (0039)
Robert Babik/GM (0036)

Our Response:

More than a year elapsed after the DFR became effective before the Agency received a formal application for an AECD or EVFM from a manufacturer wishing to take advantage of these provisions. We are committed to approving any such applications in a highly expedited manner, and we do not see a need to revise the timing associated with the applicable review procedures under 40 CFR part 85.

1.4 General/Miscellaneous Comments on Provisions for Dedicated Emergency Vehicles & Equipment

1.4.1 Treatment of Emergency Vehicles in the Heavy-Duty GHG Rule

What Commenters Said:

“We would like to remind the EPA that several FAMA member companies expressed concerns regarding the impact of the Greenhouse Gas and Fuel Economy rulemaking on emergency vehicle performance. We pointed out the potential impact of restricting the use of aggressive tire treads by mandating the use of low rolling resistance tires. Like the DPF and SCR issue, it is unlikely that the impact of this tire tread restriction will be apparent until lower rolling resistance tires have been implemented and emergency vehicle users begin to experience reduced off-road traction and reduced high-speed cornering and maneuverability. As with recent events and complaints that arose from the Southeast Association of Fire Chiefs, there may be a significant lag before the true impacts of the Greenhouse Gas and Fuel Efficiency Rules are realized. FAMA therefore urges the EPA to revisit our previous comments and data on this issue and reconsider authorizing an emergency vehicle exemption to the rolling resistance requirements now, so that we can avoid the potential for another hearing like this in the future. The very minimal impact this action would have on over-all vehicle emissions seems like a small price to pay to avoid another industry-upsetting event.” (FAMA)

Commenters:

Roger Lackore/FAMA (0028)

Our Response:

Information available to EPA at this time indicates that the rolling resistance of tires produced for emergency vehicles in response to the 2011 heavy-duty GHG rule¹ will not adversely affect the vehicles' off-road traction or high-speed cornering and maneuverability. However, we understand that currently available information may not provide full insight as to the long term performance impacts of the 2011 GHG rule. The narrow scope of the current final rule does not allow EPA to make changes in response to this comment in the present rulemaking action. When EPA next has the opportunity to conduct rulemaking relating to GHG emissions from commercial trucks, we will carefully review and consider all available tire performance and safety information. We encourage stakeholders to share additional data with EPA on this issue, should it become available, and we will consider these data as we are able.

1.4.2 Compatibility with NHTSA's Definition of Emergency Vehicle

What Commenters Said:

“The Alliance recommends that EPA encourage the Secretary of Transportation to adopt the same definition under his authority set forth at 49 U.S.C. 32902(e). Such action would ensure harmonized treatment of emergency vehicles under EPA's criteria pollutant and greenhouse gas emission regulations and the National Highway Traffic Safety Administration's CAFE regulations.”

Commenters:

Giedrius Ambrozaitis/AAM (0037)

Our Response:

EPA recognizes AAM's comment relates to a potential conflict between the definition of emergency vehicle at 40 CFR 86.1818-12 and the definition adopted in the direct final rule (77 FR 34130). AAM submitted a similar comment to EPA and NHTSA on July 27, 2012, for consideration under the light-duty greenhouse gas regulations. In the MY 2012-2016 LD GHG program, emergency vehicles are completely exempt from inclusion in the calculations for the fleet average standards. (See 77 FR 62798, October 15, 2012, at Section III.B.8). As described in the FR notice for those final rules, AAM asked the agencies to consider broadening their definitions of emergency vehicle beyond the EPCA definition, to include “fire suppression, search and rescue and other emergency vehicle types,” arguing that it is important to ensure harmonized treatment of emergency vehicles under EPA's criteria pollutant and greenhouse gas emission regulations and NHTSA's CAFE regulations. (See 77 FR 63127). In the final LD GHG rules, the agencies retained the EPCA definition of emergency vehicle for the GHG program, stating that harmonizing between the GHG and criteria pollutant programs may not be necessary. Although the agencies did not see a need to harmonize these definitions, they agreed there should be regulatory clarity. Therefore, in that final LD GHG rule, EPA amended 40 CFR 86.1803-01 to clarify that *emergency vehicle* for purposes of the greenhouse gas emissions

¹ See Federal Register dated September 15, 2011, 76 FR 57016.

standards is different than *emergency vehicle* for provisions related to defeat devices and AECD's. (See 77 FR 63155, and regulatory text below)

§ 86.1803-01 Definitions.

* * * * *

Emergency vehicle means one of the following:

(1) For the greenhouse gas emission standards in §86.1818, emergency vehicle means a motor vehicle manufactured primarily for use as an ambulance or combination ambulance-hearse or for use by the United States Government or a State or local government for law enforcement.

(2) For provisions related to defeat devices and other AECDs under this subpart, emergency vehicle means a motor vehicle that is an ambulance or a fire truck.

1.4.3 Develop a Public Awareness Program

What Commenters Said:

“While we fully support EPA’s actions on this Issue, adoption of these potentially lifesaving measures is vital we recommend that EPA consider developing a public awareness program based on the final rule that could be targeted to fire departments and private ambulance purchasers informing them of the final provisions and the necessity of seeking chassis/engine products that incorporate them, also cautioning them against using aftermarket products that are not an approved AECD.” (NTEA/AMD)

Commenters:

Mike Kastner/NTEA/AMD (0035)

Our Response:

EPA has spoken at conferences and association meetings for stakeholders in the first response community as well as for engine and vehicle manufacturers. Further, we have served as an information clearinghouse between manufacturers and end users to facilitate prompt resolution of performance issues. We continue to field phone calls and promote higher awareness of this rule.

**CHAPTER 2: Scheduled Maintenance and Maintenance Intervals
for Replenishment of Diesel Exhaust Fluid**

The comments in this section generally correspond to Section V of the preamble to the proposed rule, where we described regulations that would explicitly address replacement of diesel exhaust fluid (DEF) as part of approved emission-related scheduled maintenance and set out the permitted maintenance intervals for replacement of DEF on diesel fueled new motor vehicles, new motor vehicle engines and new nonroad compression-ignition (NRCI) engines. EPA previously applied the scheduled maintenance requirements for DEF refill through its

alternate maintenance authority², which allows EPA to approve additional maintenance based on a manufacturer's demonstration.

2.1 General support for adding DEF refill to allowable maintenance regulations

What Commenters Said:

Numerous commenters expressed support for EPA's decision to explicitly include DEF replenishment as allowable maintenance in the regulations. No commenters opposed this inclusion.

Commenters:

Jamie Song/MECA (0030)
Jed Mandel/EMA (0034)
Robert Babik/GM (0036)
Giedrius Ambrozaitis/AAM (0037)
John Cabaniss/Global Automakers (0038)
Robert Jorgensen/Cummins (0039)
Douglas Greenhaus/NADA (0041)
R. Latane Montague/ SCR Engine Manufacturers (0042)

Our Response:

We continue to believe that it is appropriate to include DEF replenishment as allowable maintenance in the regulations.

2.2 Refill interval for light-duty vehicles

What We Proposed:

For light-duty vehicles and light-duty trucks (LDVs and LDTs), we proposed to require DEF refill intervals at least equal to the scheduled oil change interval for the vehicle. This is consistent with what EPA had been requiring under the (b)(7) process.

2.2.1 Relation to oil change intervals

What Commenters Said:

Manufacturer comments expressed the concern that tying DEF intervals to oil change intervals would cause at least one of three problems:

² The regulations allow manufacturers to request a different maintenance schedule or to request new scheduled maintenance, which includes maintenance that is a direct result of the implementation of new technology not found in production prior to the 1980 model year. This allowance is specified in 40 CFR 86.094-25(b)(7) and 40 CFR 86.1834-01(b)(7), and it is sometimes known as the (b)(7) process.

- It could prevent extending oil change intervals.
- It could prevent the use of higher dosing rates to increase SCR efficiency.
- It could lead to much larger DEF tanks.

In other words, manufacturers could not increase dosing rates and/or the interval between oil changes, without substantially increasing DEF tanks sizes.

Manufacturers noted that the proposal would be a disincentive to extend oil change intervals, and in fact, may create an incentive to actually shorten oil change intervals. Manufacturers noted the benefits of new automotive and motor oil technologies that allow consumers to drive for greater miles between oil changes would be reduced if mandated minimum DEF maintenance intervals are tied to oil change intervals.

Manufacturers noted that some potential strategies to further improve fuel economy will require higher dosing rates, and that these strategies may be precluded if DEF intervals are required to keep up with ever increasing oil change intervals because of the tank size that would be required. (Note that since these comments are also related to the length of the interval, they are also addressed in section 2.2.2.)

Finally, the Alliance commented that “the connection between SCR maintenance intervals and oil change intervals is unnecessary” for two reasons. First they noted that “warnings and inducements can be designed to compel owners to add DEF at any predetermined mileage, providing strong assurances that the customers will refill the DEF tank at appropriate intervals.” They also noted that “DEF is now ubiquitously available almost everywhere, at fueling stations, convenience stores, and auto parts stores, on an availability level almost equal to that of windshield washer fluid or motor oil.” AGA provided similar comments.

Commenters:

Robert Babik/GM (0036)
 Giedrius Ambrozaitis/AAM (0037)
 John Cabaniss/Global Automakers (0038)
 Robert Jorgensen/Cummins (0039)
 Douglas Greenhaus/NADA (0041)
 R. Latane Montague/ SCR Engine Manufacturers (0042)

Our Response:

We agree with the manufacturers that DEF refill should be decoupled from oil changes. We believe that longer oil change intervals are beneficial, in that they provide a cost savings for the consumer and generally also provide an environmental benefit by reducing the amount of waste oil generated. Moreover, one of the initial reasons for tying DEF refills to oil changes for light-duty vehicles as the new technology was introduced was to substantially increase the likelihood of proper refills for consumers who were unfamiliar with DEF. However, as SCR technology has become more conventional and DEF has become more available, operators are much more likely to be familiar with DEF. For those few who may be initially unfamiliar with

the need to refill DEF, the warning lights and performance inducements will be sufficient to ensure proper refills.

Comments related to the size of the DEF tank and dosing rates are addressed in the next section.

2.2.2 Length of Maintenance Intervals for Light-Duty Vehicles

What Commenters Said:

Light-duty manufacturers commented that longer DEF intervals would have adverse consequences. The Alliance stated that it takes approximately an 8 gallon DEF (72 pound) tank to assure the DEF will last for the length of a typical scheduled oil change interval. AGA made similar comments. They both argued that space is already constrained on light-duty vehicles and may become more so as vehicles become smaller to meet greenhouse gas standards. They also noted that the additional weight would increase fuel consumption.

The Alliance also noted that some potential strategies to further improve fuel economy will require higher dosing rates, and that these strategies may be precluded if DEF intervals are required to keep up with ever increasing oil change intervals because of the tank size that would be required. They recommended that the minimum DEF refill interval in miles be ten times the range of a single tank of fuel for vehicles that do not display DEF tank level, and eight times the range for vehicles that do. Others argued for refill interval ratios as low as 3:1.

Commenters:

Robert Babik/GM (0036)
Giedrius Ambrozaitis/AAM (0037)
John Cabaniss/Global Automakers (0038)
Robert Jorgensen/Cummins (0039)
Douglas Greenhaus/NADA (0041)
R. Latane Montague/ SCR Engine Manufacturers (0042)

Our Response:

We agree that the minimum refill interval should be less than manufacturer's current recommended oil change interval (which is typically 6,000 to 10,000 miles) to address concerns about the size and weight of DEF tanks needed to achieve longer refill intervals. Given the widespread retail availability of DEF and the severe inducements against operating the vehicle without DEF, we see little if any environmental benefit from requiring longer intervals.

We disagree that the minimum interval should be based on the range of the fuel tank for light-duty vehicles. While relating DEF and fuel refills makes sense when the ratio is in the 1:1 or 2:1 range, it is not necessarily appropriate when the ratio is in the 8:1 or 10:1 range. At these higher ratios, DEF refills become sufficiently infrequent that operators will not think in terms of fuel refills. Rather, they are much more likely to think in terms of actual miles between DEF refills.

For the Final Rule, we are setting the minimum DEF interval for light-duty vehicles at 4,000 miles. This value is roughly consistent with the intervals recommended by the Alliance, as well as the typical oil change intervals when we first tied DEF refill to oil change. At 4,000 miles, a vehicle with a 400 mile fuel range would need to refill the DEF tank no more frequently than every tenth fuel fill up. For operators who change oil every 7,500 miles and fill the DEF tank when they do, no more than one DEF refill would be needed between oil changes. Regarding comments that the minimum interval be as low as three times the range of the fuel refill interval, we still believe it is necessary to require substantially longer DEF intervals for LDVs and LDTs than for commercial heavy-duty vehicles because of the wider range of usage patterns of light-duty vehicles. Most significantly, these light-duty vehicles are more likely to refuel at neighborhood refueling stations that may not have DEF. Ensuring that these vehicles can go through several tanks of fuel before needing to refill the DEF tanks reduces the likelihood that operators will allow the DEF tank to become completely empty.

2.3 Length of Maintenance Intervals for Chassis-certified Heavy-Duty Vehicles

What We Proposed:

This section addresses chassis-certified heavy-duty diesel vehicles, which are typically larger versions of light-duty pickup trucks and vans. For these vehicles, we proposed to require DEF refill intervals at least equal to the scheduled oil change interval for the vehicle, just as we did for LDTs. This is consistent with what EPA had been requiring under the (b)(7) process.

What Commenters Said:

The Alliance noted in a footnote to its comments that its comments applied equally to chassis-certified heavy-duty vehicles. See Section 2.2 for a summary of these comments.

Several engine manufacturers using SCR recommended that the minimum DEF refill interval in miles be five times the range of a single tank of fuel for vehicles that do not display DEF tank level, and three times the range for vehicles that do. They argue that “a 3:1 ratio correctly positions these vehicles between the light-duty vehicles and the engine-certified heavy-duty vehicles, and avoids imposing excessive obligations on chassis-certified products” and that “these recommended ratios will provide reasonable SCR maintenance intervals for motorists, and at the same time avoid creating obstacles to technology advances that would enable less frequent oil changes.” Cummins made similar comments.

Commenters:

Giedrius Ambrozaitis/AAM (0037)
Robert Jorgensen/Cummins (0039)
Douglas Greenhaus/NADA (0041)
R. Latane Montague/ SCR Engine Manufacturers (0042)

Our Response:

For the same reasons given in section 2.2, we believe that tying DEF refills to oil changes is no more appropriate for complete heavy-duty pickups and vans than for LDVs or LDTs. Thus, the final regulations set the minimum DEF refill interval for complete heavy-duty pickups and vans based on miles rather than fuel capacity.

The final regulations are setting the minimum DEF refill interval for complete heavy-duty pickups and vans to the same 4,000 mile level as for LDVs and LDTs. As noted in the previous section, 4,000 miles is roughly consistent with the intervals recommended by the Alliance, as well as the typical oil change intervals when we first tied DEF refill to oil change. However, Cummins and other manufacturers using SCR recommended an interval as low as three times the fuel capacity. This would mean that a vehicle with a 400 mile fuel range would need to refill the DEF tank approximately every 1,200 miles. We believe this is too frequent. We still believe it is necessary to require substantially longer DEF intervals for these complete heavy-duty vehicles because many will have usage patterns similar to light-duty vehicles. Most significantly, unlike larger commercial vehicles, many of these vehicles will refuel at neighborhood refueling stations that may not have DEF. Ensuring that these vehicles can go through several tanks of fuel before needing to refill the DEF tanks reduces the likelihood that operators will allow the DEF tank to become completely empty.

2.4 Length of Maintenance Intervals for Heavy-Duty Diesel Engines

What We Proposed:

This section addresses diesel engines that are not chassis-certified. These engines are typically used in vehicles over 14,000 pounds GVWR, as well as in smaller incomplete heavy-duty vehicles. For these vehicles, we proposed to base DEF intervals on the range of the vehicle operation (in miles or hours) of a tank of fuel rather than a fixed number of miles or hours. More specifically, we proposed an interval equal to the range (in miles or hours) of the vehicle operation that is no less than the vehicle's fuel capacity (i.e., a 1:1 ratio), for vocational vehicles such as dump trucks, concrete mixers, refuse trucks and similar typically centrally fueled applications. For all other vehicles we proposed a DEF tank refill interval equal to no less than twice the range of vehicle's fuel capacity (i.e., a 2:1 ratio).

What Commenters Said:

Commenters said that the minimum DEF to fuel range ratio should be 1:1 for all heavy-duty motor vehicle engines. They commented that longer intervals would be both unnecessary and environmentally counterproductive. They argued they are unnecessary because the combination of the severity of the performance inducements and the widespread availability of DEF. They also believe that would be counterproductive because they would adversely impact fuel consumption, either by preventing increased dosing rates or by increasing vehicle weight because of larger DEF tanks.

Manufacturers also provided supplemental comments recommending that if EPA plans to require that manufacturers base tank size on "worst case" conditions, we should clarify what this means.

They recommended that EPA should generally limit this to considering DEF and fuel consumption over the two certification test cycles (i.e., the FTP transient test and the SET).

Commenters:

Jed Mandel/EMA (0034)

Robert Jorgensen/Cummins (0039)

R. Latane Montague/ SCR Engine Manufacturers (0042)

Our Response:

EPA believes it is reasonable to base the DEF refilling intervals for heavy-duty on diesel refueling intervals because DEF refill for heavy-duty trucks is most commonly undertaken at the time of fuel refill due to DEF infrastructure developed at highway truck stops. For these engines, we are finalizing a DEF tank refill interval equal to the range (in miles or hours) of the vehicle operation that is no less than the vehicle's fuel capacity (i.e., a 1:1 ratio). We now believe that *requiring* a 2:1 ratio for vehicles not centrally-fueled is not necessary. As the commenters noted, DEF is widely available at commercial refueling stations and the performance inducements will effectively prevent operation without DEF.

Consistent with the supplemental comments from manufacturers, the final regulations explain that worst case conditions may be selected based on the FTP and SET test cycles.

2.5 Length of Maintenance Intervals for Nonroad Diesel Engines

What We Proposed:

This section addresses nonroad diesel engines. For these vehicles, we proposed to base DEF intervals on the range of the equipment operation (in hours) of a tank of fuel rather than a fixed number of hours. More specifically, we proposed an interval equal to the range (in miles or hours) of the vehicle operation that is no less than the vehicle's fuel capacity (i.e., a 1:1 ratio),

What Commenters Said:

Commenters supported EPA's proposal. Manufacturers also provided supplemental comments recommending that if EPA plans to require that manufacturers base tank size on "worst case" conditions, we should clarify what this means.

Commenters:

Jed Mandel/EMA (0034)

Robert Jorgensen/Cummins (0039)

Our Response:

EPA continues to believe it is reasonable to base the DEF refilling intervals for on diesel refueling intervals because DEF refill for nonroad is most commonly undertaken at the time of

fuel refill. For these engines, we are finalizing a DEF tank refill interval equal to the range (in hours) of the equipment operation that is no less than the equipment's fuel capacity (i.e., a 1:1 ratio).

Consistent with the supplemental comments from manufacturers, the final regulations explain that worst case conditions may be selected based on the certification test cycles. Specifically, the regulations describe (as an example) that a manufacturer may evaluate individual modes of the steady-state test cycle to determine which one represents worst case operation. The example includes a note that allows the manufacturer to exclude any test point that does not represent actual in-use operation. The most likely mode for this to apply would be for the full power mode since many engines are designed for intermittent rather than continuous operation at full power. The intent of the example is to clarify that, for certification purposes, manufacturers are not required to exhaustively evaluate every possible operating mode to ascertain the worst case. We believe that the worst steady-state test mode should adequately represent the worst-case in-use operation for most engines. Since the regulations broadly require manufacturers to apply good engineering judgment when sizing tanks, we believe this approach should be sufficient for certification. Moreover, manufacturers have a strong market incentive to properly size the DEF tanks to avoid customers facing performance inducements due to the DEF tank running dry before the fuel tank does.

CHAPTER 3: Flexibility for Nonroad Engines in Temporary Emergency Service

What We Proposed:

The comments in this section generally correspond to Section VI of the preamble to the proposed rule, where we describe the proposed revisions to allow general purpose nonroad engines to obtain temporary relief so that emission controls do not hinder the engine's performance in limited emergency situations.

3.1 Purpose and Value of the Rule; Need for the Rule

3.1.1 Need for the Rule

What Commenters Said:

Diesel powered nonroad equipment (such as backhoes, tractors, bulldozers, excavators, wheel loaders, generators, etc.) is employed to save lives, property, and infrastructure crucial to the preservation of human life, public safety and national security. Such equipment is used all over the nation to respond to car crashes, mine collapses, hurricanes, entrapments, terrorist attacks and a plethora of other catastrophes. Accordingly, it is imperative that nonroad diesel engines are available to respond to such emergency situations at full capacity - without loss of power caused by the functioning (or malfunctioning) of emission controls. It is critical that EPA provide flexibility in its regulations to ensure that nonroad equipment used temporarily in emergency operations may continue to operate to ameliorate the emergency and save lives without having to

be concerned that the functioning (or nonfunctioning) of emission controls could lead to a mission disabling inducement. EMA strongly supports the adoption of such flexibility and urges EPA to finalize the rule promptly. (EMA)

“...a forced shutdown of the gen-sets . . . could interfere with our ability to produce and supply drinking water in an extended power outage . . . Throughout our facilities and operations, we cannot predict when gen-sets will be supporting emergency situations; and, we must enable the operator to make that determination as conditions arise. Nor do we expect EPA could foresee all critical circumstances associated with power generation and should likewise enable end users to make that determination as the need arises.” (Joint Water Commission)

“Caterpillar agrees that there is a need for AECDs to maintain operation of mobile and stationary equipment during emergency situations” (Caterpillar)

MECA agrees with EPA that temporary flexibility may be appropriate to allow SCR-equipped off-road engines to operate without DEF in emergency circumstances. SCR is a proven, durable NOx reduction technology for mobile sources. SCR applications have also been introduced recently on a range of off-road diesel engines to comply with EPA’s interim Tier 4 emission standards and off-road SCR applications are expected to expand significantly in the coming few years as OEMs certify new off-road diesel engines to EPA’s final Tier 4 emission limits.

With respect to EPA’s proposal to add provisions to 40 CFR §1039 that would allow engine manufacturers to implement temporary AECDs that override inducements in case of an emergency, Cummins supports comments submitted by EMA. EPA should finalize its proposal to allow inducement overrides for nonroad machines used temporarily in emergency situations (Cummins)

Commenters:

Tyler Wubbena/Joint Water Commission (0029)

Jed Mandel/EMA (0034)

Rey Agama/Caterpillar (0040)

Jamie Song/MECA (0030)

Robert Jorgensen/Cummins (0039)

Our Response:

We agree these provisions are prudent and would allow manufacturers the flexibility to ensure their SCR-equipped engine/emission systems are durable and reliable, even during extreme emergency situations.

3.2 Scope and Applicability of the Rule

3.2.1 Definition of Emergency Situation

What We Proposed:

While the proposed regulations did not include a separate definition for “emergency situation,” they did note in §1039.665 that for purposes of that section, we would consider an emergency situation to be “one in which the functioning (or malfunctioning) of emission controls poses a significant risk to human life.”

What Commenters Said:

“We suggest the definition of “emergency situation” (for gen-sets) proposed in 40 C.F.R. § 1039.665 align with “emergency stationary internal combustion engine” definition set forth in 40 C.F.R. § 60.4219 when the normal power source is interrupted. This would facilitate the use of an SCR inducement override when operating certified non-emergency gen-set engines in emergency gen-set applications. With the override, gen-sets can continue to run in the event of normal power source interruption and faults within the aftertreatment system.” (Joint Water Commission; Hazen & Sawyer)

EPA should confirm that its definition of “emergency situation” encompasses situations that pose not only an immediate or direct “significant risk to human life”, but also those that pose an indirect or delayed risk to human life such as emergencies that threaten national security or public safety, such as disruptions to the nation’s air traffic control system, banking systems, communication networks, or other key components to the Nation’s infrastructure. (EMA)

Caterpillar recommends that the definition be expanded to include the risk of damage to property where human life may not be directly at risk or the potential risk to human life is unknown, such as when addressing approaching flood waters, earthquake damaged structures, or other threats to public safety. The EPA should modify the definition of “emergency situation” in the regulatory text to clarify that the risk of damage to property or threats to public safety justifies the use of this AECD.

The definition of an emergency situation should include indirect or delayed risks to human life, emergencies that threaten national security or public safety, and other risks to the safety and welfare of the country. (Cummins)

Commenters:

Tyler Wubbena/Joint Water Commission (0029)
Brian Lisk/Hazen & Sawyer (0033)
Jed Mandel/EMA (0034)
Rey Agama/Caterpillar (0040)
Robert Jorgensen/Cummins (0039)

Our Response:

We understand there may be a reasonable use of an AECD under these provisions where the threat avoided by continued operation of the engine is *indirectly* tied to human life, such as providing temporary power to a 911 call center. We are therefore adopting regulations that describe an emergency situation as one where the condition of an engine's emission controls poses a significant *direct or indirect* risk to human life. We do not see a need to create a regulatory definition of emergency situation beyond the language specifically in the special provisions section. EPA is not finalizing a more precise definition because we know we can not foresee all possible emergency situations, and we understand that the exact threats posed by various situations are rarely known at the time that decisions must be made about activating emissions control over-rides. As for the other examples of potential risks that could be avoided by continued operation of an engine, EPA is not further expanding the definition of emergency situation. Nonroad engines are generally operated for some beneficial reason. The purpose of the emergency operation provision was not to allow operation of nonroad engines in all situations where there may be benefits for property or welfare, but to have a narrow provision to allow operation of nonroad engines without emission controls where the danger of harm to human life outweighs the also-critical benefits of emission control. Expanding the definition of emergency situation could arguably allow use of uncontrolled nonroad engines in most or all situations for which nonroad engines are normally used, which could severely undercut the benefits of the emission controls.

We are not harmonizing this term with other provisions related to emergencies, which are based on separate rationales. We expect operators who engage this AECD to report each use to the engine manufacturer, and manufacturers will compile a report annually to EPA for review.

Above in Section 1.2.2, we explain the reasons why we are not extending the use of these AECD's to stationary engines, or to engines certified under both part 1039 and part 60. We expect that some portable gen-sets certified only under part 1039 may make use of these AECD's, should an emissions control system fault trigger performance inducements when the normal power source is interrupted.

3.3 Certification & Approvals of AECD's for Nonroad Engines & Equipment

3.3.1 Activation of the AECD

What Commenters Said:

EPA should modify the allowable AECD activation approval sequence in order to reflect emergency conditions, specifically eliminating the need for a verbal request for prior permission to activate an AECD. It is foreseeable that an operator may not (i) have an effective means of contacting the certificate holder due to interruptions to communication systems caused by the emergency situation or (ii) have the time to establish such communication. It is not prudent to jeopardize human life or national or public security based on the availability of the certificate holder to field such calls 24 hours a day, 7 days a week and 365 days a year. In addition, requiring the certificate holder to establish a means of fielding such requests for permission (literally around the clock and year round) would create an undue burden on the certificate

holder and provide no benefit to the environment. EPA should include the ability for the operator to activate the AECD either by entering a preprogrammed emergency sequence of commands found in the owner's manual or by some other means of "one time only" use of an inducement override option. Following such initial activation, the operator should be required to send the certificate holder notice that it engaged the AECD, including a description of the emergency situation, the reason for the use of the AECD, and a signature from an official acknowledging the conditions of the emergency situation. Further, the regulations should provide the operator a means to reactivate the AECD immediately (without the notice described above) in the event a prolonged emergency situation requires continued use of the engine without interruption from the functioning (or nonfunctioning) of its emission controls. (EMA)

Caterpillar recommends that nonroad equipment covered by these provisions be allowed to be sold with the AECD ready to be activated when it is needed, without having to first contact the certificate holder.

The regulation should provide the certificate holder with the flexibility to adopt activation methods that assure the availability of such equipment to assist in the wide range of emergency situations that may arise. (Cummins)

Commenters:

Jed Mandel/EMA (0034)
Rey Agama/Caterpillar (0040)
Robert Jorgensen/Cummins (0039)

Our Response:

We agree that it is prudent to enable the dormant code for the AECD to be activated without requiring operators to reach a manufacturer at the time of the emergency. We are finalizing the rule to permit, but not require, pre-arming of the dormant code. OEM's may choose to sell equipment with AECD unarmed, with instructions that if an end user wishes to have the AECD available, to call the OEM immediately to activate, similar to a new credit card scenario. If a manufacturer wishes to enable a single use of the AECD as a pre-armed but dormant feature, our final rule allows this. As proposed, we are finalizing unlimited renewals, for additional contiguous intervals of emissions control bypass, if warranted during prolonged disasters.

3.3.2 Duration of the AECD

What Commenters Said:

[*EMA supplemental comments*] We note that those SCR related inducements could be triggered because of a lack of available diesel exhaust fluid (DEF), a crimped DEF line, a faulty sensor, or any number of conditions that could lead to engine shutdown and the subsequent need to diagnose and fix whatever triggered the inducement. During and immediately following a disaster, many business owners (including those who repair engines and supply DEF) may be unable to communicate with customers due to a lack of power - their servers may be down, they may not have an ability to recharge their cell phones, and they may not have either internet or

telephone service. Further, those able to communicate may be overwhelmed with calls to repair or service vital emergency equipment as well as with requests to rent such life-saving equipment.

EMA member company's dealers and distributors shared that, following Hurricane Sandy, it took over two weeks to get a technician to repair a unit (other than those at hospitals), where the normal response time is typically same day service.

EPA must allow an AECD to remain active for a period of time that is appropriate for the intended purpose. If the objective is to ensure that the functioning (or malfunctioning) of emission controls does not pose a significant risk to human life, the AECD must remain active for the period of time necessary to avoid the significant risk to human life. As engines typically do not have a means to measure calendar time, such time frame should be described in terms of engine hours of operation. Otherwise, operators must have the ability to reactivate the AECD an unlimited number of times without the need for reprogramming by the manufacturer in order to avoid significant risk to human life created by the functioning (or malfunctioning) of emission controls. In the event of an emergency that might preclude the availability of DEF, there likely would be some significant continued availability of diesel fuel. A typical diesel fuel tank is sized to allow the operator to run the equipment a full shift – generally 12 hours – without having to refill. EMA recommends that, at a minimum, EPA allow the AECD to be activated, and operate, for 10 diesel fuel refilling cycles (i.e., 120 hours) without concern that the emission control system will trigger an inducement. Finally, EMA recommends that EPA include in the final rule (or establish a process for granting) extended AECD approvals in the event of a wide-scale or prolonged emergency situation that would result in EPA granting a DEF waiver. Faced with a catastrophe on the scale of the 2011 tsunami in Japan or Hurricane Katrina, it is foreseeable that DEF may be unavailable for a prolonged period of time. Accordingly, if EPA were to grant a DEF waiver, EPA should provide a means to allow extended deactivation of scheduled inducements resulting from an operator's inability to replenish DEF in such situations. Such long term DEF waiver scenarios are equally applicable to both nonroad and on-highway engines

Further, AECDs incorporated into gen sets and pumps must have the ability to remain active for a period of 30 calendar days after initial activation. Such non-dedicated emergency gen sets and pumps will include (i) a time clock for the purpose of recording the time elapsed after the AECD is first activated and automatically triggering deactivation of the AECD after 30 days and (ii) labels specifying that such engines may only be installed in electrical power generation or flood control applications. (EMA)

This [24 engine hour] duration appears to be arbitrary, and would not provide enough time to address a large scale emergency situation. Caterpillar recommends that the duration be increased and that it should not be less than the maximum estimated human survival time without food and water (based on FEMA guidance) or the maximum estimated time for EPA to grant an emission waiver (based on EPA's historical data base), whichever is longer. For mobile construction equipment, the AECD duration should allow for a minimum of 10 refills of the diesel fuel tank, which would be roughly equivalent to 120 hours of engine operation, since these tanks are generally sized to allow twelve hours of operation. Caterpillar also recommends that the EPA allow for extended activation of this AECD for long-term emergencies. (Caterpillar)

When activated, the emergency override should be active for the amount of time a human being can survive without food or water. (Cummins)

Commenters:

Jed Mandel/EMA (0034)
Rey Agama/Caterpillar (0040)
Robert Jorgensen/Cummins (0039)

Our Response:

In the final regulations, we are allowing the AECD to remain active for up to 120 engine hours instead of the proposed 24 engine hours. Based on the manufacturers' comments, we believe that in some emergencies, it could take several days before technicians could get to all engines needing service. In particular, the experience during Hurricane Sandy, which caused major damage in the northeastern United States, was especially instructive. The combination of an increase in the number of engines requiring service (due in part to the number of backup generators being placed into long-term service) and the difficulty for technicians to travel to these engines scattered over such a large area caused long delays for operators needing service. For equipment that runs continuously, extending the period to 120 engine hours allows manufacturers up to five days to reach each engine needing to have the AECD rearmed, and longer for equipment running intermittently. We agree that limiting the AECD to 24 engine hours of operation would be insufficient to ensure that emission controls do not inhibit engine operation during prolonged disasters like hurricanes and major storms, even with available resets. Even two or three days may not be enough time to allow a storm to dissipate, communication to be restored, and roads to be cleared to the point where technicians could reach every engine needing emergency service. In response to this new information, we believe it is prudent to extend this allowance to 120 engine hours, which is equivalent to five operating days for engines running continuously.

We are also adopting two related provisions directed to manufacturers to minimize any abuse of this expended allowance. First, we are requiring manufacturers to include a method of deactivating the AECD after emergencies of short duration. This was not essential under the proposed approach because the AECD would deactivate itself after 24 engine hours. However, now the AECD can remain active for up to 120 hours, which could easily be longer than the actual emergency condition. Thus it is necessary to have some way for the operator to deactivate the AECD. Second, we are requiring the manufacturer to take appropriate additional steps to motivate operators to report AECD activation, at which time they may request resetting of the AECD. For example, a manufacturer could include persistent visible and/or audible alarms that are active from the point when the AECD is activated to the point when it is reset. We are also recommending that manufacturers add a secondary time limit for operation in which the AECD is deactivated before the 120-hour time limit is reached. Such a limit could be based on either on a set number of days (for engines that can track time when the engine is not running) or total engines hours including engine hours for which the AECD is not active.

We are not adopting the requested provision to allow generator sets and pumps the ability to remain active for a period of 30 calendar days after initial activation. The comment does not

provide justification for allowing this provision, which would allow generator sets and pumps six times as long to operate after a single AECD activation, compared to other engines. The final regulations allow operators to request reactivation of the emergency AECD for these engines in appropriate situations.