



This document is scheduled to be published in the Federal Register on 09/05/2012 and available online at <http://federalregister.gov/a/2012-21967>, and on FDsys.gov

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 86

[AMS-FRL-9716-5]

Nonconformance Penalties for On-highway Heavy-Duty Diesel Engines

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final Rule.

SUMMARY: EPA is taking final action to establish nonconformance penalties (NCPs) for manufacturers of heavy heavy-duty diesel engines (HHDDE) in model years 2012 and later for emissions of oxides of nitrogen (NOx) because we have found the criteria for NCPs and the Clean Air Act have been met. The NOx standards to which these NCPs apply were established by a rule published on January 18, 2001. In general, NCPs allow a manufacturer of heavy-duty engines (HDEs) whose engines do not conform to applicable emission standards, but do not exceed a designated upper limit, to be issued a certificate of conformity upon payment of a monetary penalty to the United States Government. The upper limit associated with these NCPs is 0.50 grams of NOx per brake horsepower-hour (g/bhp-hr).

This Final Rule specifies certain parameters that are entered into the preexisting penalty formulas along with the emissions of the engine and the incorporation of other factors to determine the amount a manufacturer must pay. Key parameters that determine the NCP a manufacturer must pay are EPA's estimated cost of compliance for a near worst-case engine and the degree to which the engine exceeds the emission standard (as measured from production engines).

EPA proposed NCPs for medium heavy duty diesel engines. However, EPA is not taking final action with regard to NCPs for these engines at this time because EPA has not completed its review of the data and comments regarding these engines.

DATES: This rule is effective [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: EPA has established a docket for this action under Docket ID EPA-HQ-OAR-2011-1000. All documents in the docket are listed in the <http://www.regulations.gov> index. Although listed in the index, some information is not publicly available, e.g., confidential business information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy in the docket. Publicly available docket materials are available either electronically in <http://www.regulations.gov> or in hard copy at the following location: EPA: EPA Docket Center, EPA/DC, EPA West, Room 3334, 1301 Constitution Ave., NW., Washington, DC. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Air Docket is (202) 566-1742.

FOR FURTHER INFORMATION CONTACT: Chuck Moulis, U.S. EPA, National Vehicle and Fuel Emissions Laboratory, 2000 Traverwood, Ann Arbor MI 48105; Telephone (734) 214-4826; Email moulis.charles@epa.gov.

SUPPLEMENTARY INFORMATION:

Regulated Entities

This action could affect you if you produce or import new heavy-duty diesel engines which are intended for use in highway vehicles such as trucks and buses or

heavy-duty highway vehicles. The table below gives some examples of entities that may be affected by these regulations. However, because these are only examples, you should carefully examine the regulations in 40 CFR part 86. If you have questions, call the person listed in the **FOR FURTHER INFORMATION CONTACT** section above.

Category	NAICS ^a Codes	Examples of potentially regulated entities
Industry	336112 336120	Engine and truck manufacturers.

^a North American Industry Classification System (NAICS).

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I. Executive Summary

A. Purpose of This Action

Section 206(g) of the Clean Air Act (the Act), 42 U.S.C. 7525(g), directs EPA to promulgate regulations permitting manufacturers of heavy-duty engines or heavy-duty vehicles to receive a certificate of conformity for engines or vehicles that exceed an EPA emissions standard if the manufacturer pays a nonconformance penalty (NCP). This action adopts NCPs for MY2012 and later heavy heavy-duty diesel engines (HHDDE) with respect to the NOx emissions standards applicable to these engines. Engine manufacturers will be able to receive a certificate of conformity based on either demonstrating compliance with the 0.20 g/bhp-hr NOx emission standard, or paying NCPs under the penalty formula established in this rule. This provides an alternative compliance option in situations where, as here, EPA has determined that the criteria for establishing NCPs have been met.

B. Summary of Today's Action

EPA proposed that the criteria for setting NCPs had been met for the 0.20 g/bhp-hr NOx emission standard for HHDDEs, and we are setting NCPs for these diesel engines in this final action.¹ The final NCPs for HHDDE are approximately twice the values proposed. This difference is primarily because of new information received during the public comment period related to fuel and diesel exhaust fluid (DEF) prices. The

¹ The proposed rule was published at 77 FR 4736 (January 31, 2012).

derivation of the final penalties is described in a support document titled “Nonconformance Penalties for 2012 and later Highway Heavy-Duty Diesel Engines: Technical Support Document” (Technical Support Document), which is available in the public docket for this rulemaking. Under the final penalty regulations, nonconforming manufacturer with engines at the upper NOx limit of 0.50 g/bhp-hr would pay a penalty of \$3,775 for each model year 2012 engine it produces. Manufacturers would pay a lesser penalty if the NOx emissions of the engine are lower. For example, the penalty for a 2012 engine with NOx emissions at 0.30 g/bhp-hr would be \$1,259.

C. Impacts of This Action

NCPs have a small environmental impact. We expect relatively few engine families to be certified under these provisions. Any impacts should be short-term in nature because the penalties are structured to increase over time to discourage use in later model years and because the penalty figures are high enough, such that the increase in the maximum penalty in later model years will likely limit the practical availability of NCPs in future years. In addition, Navistar, the only company that has requested certificates based on the use of NCPs, has publicly announced it will introduce new technology engines in 2013 which will meet the 0.20 g/hp-hr NOx standard without the need for NCPs;

NCPs generally also have minimal adverse economic impacts. Their use is optional, and manufacturers have historically chosen to use NCPs only when they are otherwise unable to comply with emissions standards. Manufacturers that choose to make use of the NCPs will incur those costs, which are based on the cost of complying with the emission standards.

II. Overview and Background

A. Overview

Section 206(g) of the Clean Air Act (the Act), 42 U.S.C. 7525(g), directs EPA to promulgate regulations permitting manufacturers of heavy-duty engines (HDEs) or heavy-duty vehicles (HDVs) to receive a certificate of conformity for HDEs or HDVs that exceed a Federal emissions standard if the manufacturer pays a nonconformance penalty (NCP). Congress adopted section 206(g) in the Clean Air Act Amendments of 1977 as a response to a concern about manufacturers unable to comply with technology-forcing emissions standards for heavy-duty engines in the lead-time provided for the emissions standards. NCPs were intended to remedy this concern, while ensuring that conforming manufacturers would not suffer a competitive disadvantage compared to nonconforming manufacturers.

The first NCP rule, sometimes referred to as the “generic” NCP rule, established three basic criteria for determining the emission standards for which nonconformance penalties would be established in any given model year. 50 FR 35374 (August 30, 1985). The first criterion is that the emission standard in question is a new emission standard or that the standard is an existing standard and becomes more difficult to meet. This can occur in two ways, either by the emission standard itself becoming more stringent, or due to its interaction with another emission standard that has become more stringent. Second, EPA must find that substantial work is required in order to meet the emission standard. Third, EPA must find that it is likely that a manufacturer will be unable to comply by the

end of the lead time provided for technological reasons (referred to in earlier rules as a “technological laggard”). The first NCP rule also established the formula for determining the amount of an NCP. In subsequent NCP rules, EPA made determinations about which emissions standards met the criteria for establishing NCPs, and specified the values for various parameters that are used in the formula to calculate the dollar value of a manufacturer’s NCP. The regulations addressing these provisions are in Subpart L of 40 CFR Part 86.

EPA proposed that these criteria had been met for the 0.20 g/bhp-hr NOx emission standard for heavy heavy-duty diesel engines. 77 FR 4736 (January 31, 2012).² Although we did not identify the technological laggard in the NPRM, we have since identified Navistar as the manufacturer that needs NCPs. We proposed to establish NCPs because Navistar was unable to achieve the 0.20 g/bhp-hr NOx standard and did not have sufficient emission credits to cover the 2012 model year. At the time of the proposal, Navistar was attempting to meet the NOx emission standard with a technology that is different than the approach used by other engine manufacturers. However, Navistar recently announced that it would switch its approach to use the same general technology as the other engine manufacturers – a catalytic approach called selective catalytic reduction (SCR). As described in Section IV. C. , we have determined that Navistar will be unable to apply this technology to all of its engine families sold in the U.S. to achieve 0.20 g/hp-hr NOx for at least several months, and will need NCPs until it completes its transition to the new technology.

² EPA simultaneously published an Interim Final Rule establishing interim NCPs for heavy heavy-duty engines (77 FR 4678, January 31, 2012).

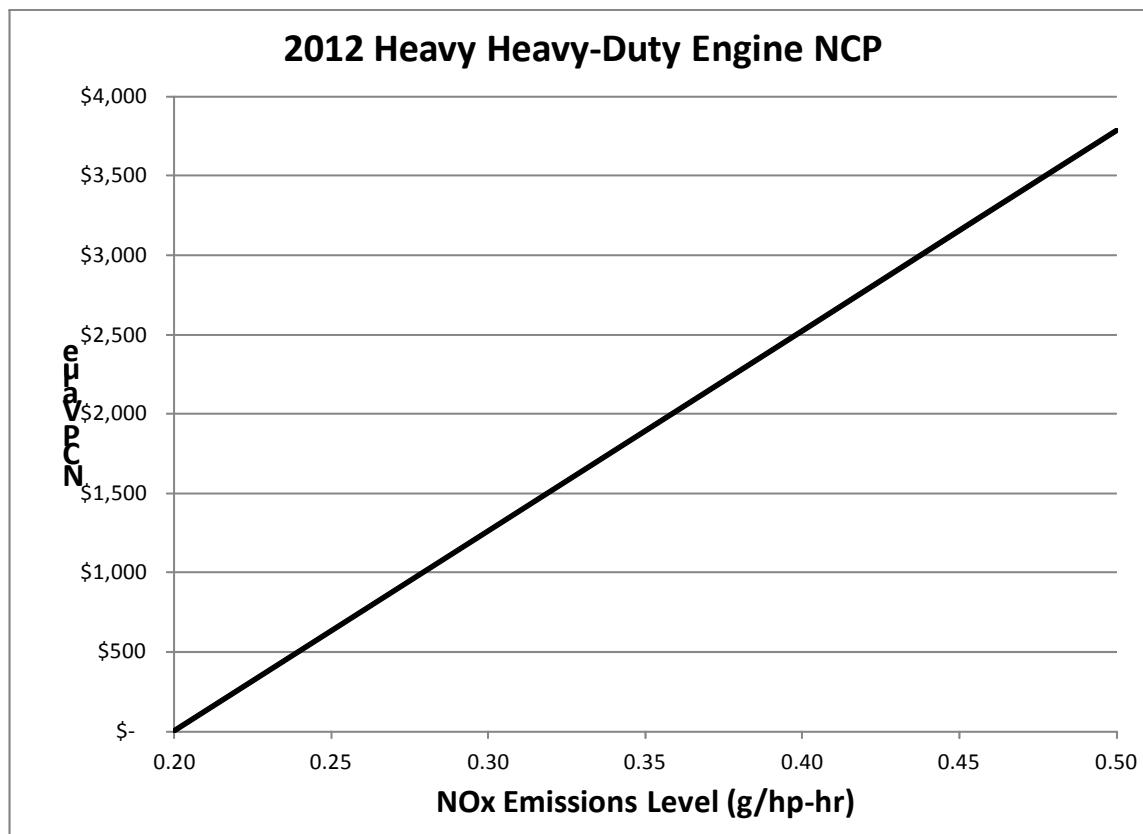
We proposed to base the calculation of the NCPs on the existing regulatory framework, revising only the upper limit and the cost parameters. We also proposed to set the upper limit at 0.50 g/bhp-hr, which means that no manufacturer paying NCPs would be allowed to certify engines with NOx emissions above this limit. The proposed penalty for HHDDEs at that limit was \$1,919 for model year 2012. Consistent with the provisions of the existing regulations, this value reflected our best estimate of the near-worst case cost difference between an engine with NOx emissions at the upper limit and a compliant engine. The regulations contain provisions to increase the penalties each year for later model years.

The NCPs being finalized for HHDDE are approximately twice the values proposed. This difference is primarily because of new information received during the public comment period related to fuel and diesel exhaust fluid (DEF) prices. The derivation of the final penalties is described in a support document titled “Nonconformance Penalties for 2012 and later Highway Heavy-Duty Diesel Engines: Technical Support Document” (Technical Support Document), which is available in the public docket for this rulemaking.

It is important to note that the NCP parameters being finalized were developed using the same basic methodology described in the NPRM. As in all NCP rules, the final NCPs are based on the estimated difference in compliance costs for engines at the upper limit and engines at the standard. Thus, engines with emissions at the upper limit can be considered to be baseline engines for the analysis. These baseline engines also represent the engines against which complying engines could compete in the marketplace.

As shown in Figure 1, a nonconforming manufacturer with engines at the upper NOx limit of 0.50 g/bhp-hr would pay a penalty of \$3,775 for each model year 2012 engine it produces. For later model years, this maximum penalty will increase by several hundred dollars per year as specified in 40 CFR 86.1113-87. While the exact rate of increase will depend on the number of engines for which NCPs are used, the penalty for engines at the upper limit could be more than \$5,000 by 2015. Manufacturers would pay a lesser penalty if the NOx emissions of the nonconforming engine are lower. For example, the penalty for a 2012 engine with NOx emissions at 0.30 g/bhp-hr would be \$1,259.

Figure 1 – Penalty level as a function of compliance level



We received numerous comments on our proposal to establish NCPs. Our detailed analysis of these comments is contained in the Response to Comments document for this rulemaking. The major comments are summarized briefly below.

- Several commenters questioned whether the regulatory criteria for establishing NCPs had been met. These comments are addressed in Section IV.
- Several commenters addressed the level of the penalty, mostly claiming that the penalty needed to be higher to meet the statutory requirement to remove the competitive disadvantage for complying manufacturers. These comments are addressed in Section V.
- The few comments we received on the upper limit supported setting it at 0.50 g/bhp-hr. These comments are addressed in Section V. A.
- Comments on the methodology used to calculate costs addressed both our proposed methodology and alternative methodologies. Comments on our proposed methodology are discussed in Section V. B. and comments on alternative methodologies are discussed in Section V. D.

NCPs have a small environmental impact. We expect relatively few engine families to be certified under these provisions. Any impacts should be short-term in nature because the increase in the maximum penalty in later model years will likely limit the practical availability of NCPs in future years. The structure of the penalties, by increasing over time, discourages use in later model years; and because the penalty figures are high enough, such that use in later model years is unlikely to be a viable option for any manufacturer.

NCPs generally also have minimal adverse economic impacts. Their use is optional, and manufacturers have historically chosen to use NCPs only when they are otherwise unable to comply with emissions standards. Manufacturers that choose to make use of the NCPs will incur those costs, which are based on the cost of complying with the emission standards.

Section 553(d) of the Administrative Procedure Act (APA), 5 U.S.C. chapter 5, generally provides that rules may not take effect earlier than 30 days after they are published in the Federal Register. APA section 553(d) excepts from this provision any action that grants or recognizes an exemption or relieves a restriction. Since today's action can be considered to relieve a restriction that would otherwise prevent a manufacturer from certifying, EPA is making this action effective immediately upon publication. This Final Rule does not set new requirements, but rather creates an optional path by which a manufacturer unable to meet the NOx standard may obtain a certificate of conformity that they could not otherwise obtain without this Final Rule. Thus, the NCPs promulgated in this Final Rule will apply for all engines introduced into commerce on or after [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

B. Statutory Authority

Section 206(g) of the Act, 42 U.S.C. 7525(g), directs EPA to promulgate regulations permitting manufacturers of heavy-duty engines (HDEs) or heavy-duty vehicles (HDVs) to receive a certificate of conformity for HDEs or HDVs that exceed a Federal emissions standard, but do not exceed an upper limit associated with that standard, if the manufacturer pays a nonconformance penalty (NCP). Congress adopted section 206(g) in the Clean Air Act Amendments of 1977 as a response to a concern with

requiring technology-forcing emissions standards for heavy-duty engines. The concern was if strict technology-forcing standards were promulgated, then some manufacturers might be unable to comply in the lead-time provided for the emissions standards and would be forced out of the marketplace. NCPs were intended to remedy this concern. The nonconforming manufacturers would have a temporary alternative that would permit them to receive a certificate of conformity by payment of a penalty, allowing the engines or vehicles to be introduced into commerce and sold. At the same time, conforming manufacturers would not suffer compared to nonconforming manufacturers, because the NCPs would remove the competitive disadvantage to them. NCPs would be based, in part, on money saved by the nonconforming manufacturer. Providing this relief facilitated EPA's authority to set technology forcing standards. Without this relief, EPA may have needed to be more cautious in setting standards, given the possibility that a lagging manufacturer might not be able to meet the standards in the lead-time provided.

Under section 206(g)(1), NCPs may be offered for HDVs or HDEs. The penalty may vary by pollutant and by class or category of vehicle or engine. No NCP-based certificate may be issued if the engine or vehicle exceeds the degree of reduction determined by the Administrator to be practicable. This emission level is identified in the regulations as the upper limit. Section 206(g)(3) requires that NCPs:

- Account for the degree of emission nonconformity;
- Increase periodically to provide incentive for nonconforming manufacturers to achieve the emission standards; and
- Remove the competitive disadvantage to conforming manufacturers.

Section 206(g) authorizes EPA to require testing of production vehicles or engines in order to determine the emission level upon which the penalty is based. If the emission level of a vehicle or engine exceeds an upper limit of nonconformity established by EPA through regulation, the vehicle or engine would not qualify for an NCP under section 206(g) and no certificate of conformity could be issued to the manufacturer. If the emission level is below the upper limit but above the standard, that emission level becomes the “compliance level,” which is also the benchmark for warranty and recall liability. The manufacturer who elects to pay the NCP is liable for vehicles or engines that exceed the compliance level in use. The manufacturer does not have in-use warranty or recall liability for emissions levels above the standard but below the compliance level.

C. Background Regarding Nonconformance Penalty Rules

Since the promulgation of the first NCP rule in 1985, subsequent NCP rules generally have been described as continuing “phases” of the initial NCP rule. The first NCP rule (Phase I), sometimes referred to as the “generic” NCP rule, established three basic criteria for determining the eligibility of emission standards for nonconformance penalties in any given model year. 50 FR 35374 (August 30, 1985). When adopted in 1985, EPA intended to use the criteria of 40 CFR 86.1103-87 in determining whether to establish NCPs. They were included in the regulations to clarify that EPA's obligation under the generic rule to establish NCPs only applied where these criteria were met. As

described in Section V. of this Final Rule, we have determined that these criteria have been met.³

The first criterion is that the emission standard in question is a new emission standard or that the standard is an existing standard and becomes more difficult to meet. This can occur in two ways, either by the emission standard itself becoming more stringent, or due to its interaction with another emission standard that has become more stringent. Under the second criterion, EPA must find that substantial work is required in order to meet the emission standard. As described in §86.1103-87(b), EPA considers “substantial work” to mean the application of technology not previously used in that vehicle or engine class/subclass, or a significant modification of existing technology, in order to bring that vehicle/engine into compliance. EPA does not consider minor modifications or calibration changes to be classified as substantial work. EPA considers that substantial work is required if such work is needed to bring emissions from the level of the previous standard to the level of the new or revised standard, even if at the time the NCP rulemaking is taking place, some manufacturers have already completed that work. Third, EPA must find that a manufacturer is likely to be noncomplying for technological reasons (referred to in earlier rules as a “technological laggard”). Prior NCP rules have considered such a technological laggard to be a manufacturer who cannot meet a particular emission standard due to technological (not economic) difficulties and who, in the absence of NCPs, might be forced from the marketplace.

The criteria and methodologies established in the 1985 NCP rule have since been used to determine eligibility and to establish NCPs for a number of heavy-duty emission

³ We note that EPA may revise the criteria at any time through notice and comment rulemaking. Thus, these criteria do not constrain EPA from adopting NCPs in other circumstances, as long as the statutory criteria of section 206(g) are met.

standards. Phases II, III, IV, V, and VI published in the period from 1985 to 2002, established NCPs that, in combination, cover the full range of heavy-duty; from heavy light-duty trucks (6,000-8,500 pounds gross vehicle weight) to the largest diesel truck and urban bus engines. NCPs have been established for hydrocarbons (HC), carbon monoxide (CO), nitrogen oxides (NOx), and particulate matter (PM). The most recent NCP rule (67 FR 51464, August 8, 2002) established NCPs for the 2004 and later model year NOx standard for heavy-duty diesel engines (HDDEs). The NCP rulemaking phases are summarized in greater detail in the Technical Support Document for this rulemaking.

D. 2007 and 2010 NOx Standards

The 0.20 g/bhp-hr NOx standard that applies for current and future heavy-duty engines was adopted January 18, 2001 (66 FR 5001), and first applied in the 2007 model year. However, because of phase-in provisions adopted in that rule and use of emission credits generated by manufacturers for early compliance, manufacturers have been able to continue to produce engines with NOx emissions greater than 0.20 g/bhp-hr. Most engines during the phase-in had NOx emissions near 1.2 g/bhp-hr. The phase-in provisions ended after model year 2009 so that the 0.20 g/bhp-hr NOx standard was fully phased-in for model year 2010. Equally important, the cap applicable to Family Emission Limits (FELs)⁴ for credit-using engine families was lowered to 0.50 g/bhp-hr beginning in model year 2010. Because of these changes that occurred in model year 2010, the 0.20 g/bhp-hr NOx emission standard is often referred to as the 2010 NOx

⁴ FELs are emission levels specified by the manufacturer that serve as the applicable emission standard for engines participating in the emission averaging program. The FEL cap is the highest FEL to which a manufacturer may certify an engine using emission credits.

emission standard, even though it applied to engines as early as model year 2007.

III. Previous Interim Final Rule

On January 31, 2012, EPA simultaneously published an Interim Final Rule establishing interim NCPs for heavy heavy-duty engines and a parallel Notice of Proposed Rulemaking (NPRM). The NCPs in this Final Rule will supersede the NCPs that were promulgated in the Interim Final Rule as of [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

Several engine manufacturers petitioned EPA to rescind that Interim Final Rule. These petitions and EPA's responses denying them have been placed into the Docket for this rule.

These engine manufacturers also filed judicial challenges to the Interim Final Rule. Mack Trucks, et al v. EPA, No. 12-1077 (D.C. Cir). They challenged EPA's decision to establish NCPs in an interim final rule without going through notice and comment. They also challenged our finding that the regulatory criteria had been met to promulgate NCPs for the 2010 NOx standard, as well as our conclusion that the interim NCP levels removed the competitive disadvantage for complying manufacturers. On June 12, 2012, the Court of Appeals for the D.C. Circuit issued an opinion holding that EPA violated the procedural requirements for rulemaking because EPA did not have good cause to issue the rule without providing notice and opportunity for comment. *Id.*, 2012 U.S. App. LEXIS 11851 (June 12, 2012). The Court did not rule on the merits of EPA's findings about the regulatory criteria or the level of the NCP. Nevertheless, it

stated in dicta its concerns about these issues, which are discussed below in Sections IV. (NCP Eligibility) and V. (Penalty Rates).

IV. NCP Eligibility

Section II. C. of this Final Rule notes that EPA regulations provide for three criteria to be met in order to determine that an NCP should be established in any given model year. As is described below, these three criteria address different aspects of the appropriateness of NCPs, and it is important to consider each criterion separately in its own proper context. In general, the first two criteria address whether the standard in question created the *possibility* that a technological laggards could develop, while the third criterion addresses the *likelihood* that there will be a technological laggard. For the 2010 NOx standard, we find that these criteria have been met for heavy heavy-duty diesel engines, and it is therefore appropriate to establish NCPs for this standard for the current model year and later.

A. First criterion - whether the MY2010 and later NOx standard is more stringent than the previous NOx standard

The first criterion requires that the emission standard in question must be more stringent than the previous standard. This is the case with the 2010 NOx standard. The previous emission standard for this category is a combined NMHC + NOx standard of 2.4 g/bhp-hr, or optionally a 2.5 g/bhp-hr NMHC + NOx with a limit of 0.5 g/bhp-hr NMHC.⁵ The 2010 (i.e., current) standards are 0.20 g/bhp-hr for NOx and 0.14 g/bhp-hr for NMHC.

⁵ NMHC stands for non-methane hydrocarbons, which is a measure of total

Some commenters argued that this standard should no longer be considered a new standard because it went into full effect two model years ago. We did not promulgate NCPs for the 2010 and 2011 model years because we had no basis for concluding it was likely that any manufacturer would qualify as a technological laggard, as all manufacturers met the standard either directly or through application of credits. However, the fact that we did not promulgate NCPs for the first year a standard went into effect does not preclude us from promulgating NCPs for such standard at a later time, when it is determined the regulatory criteria have been met. While it is not a path we have generally taken, nothing in the statute or in our regulations, which refer to new or revised standards, precludes EPA from promulgating NCPs after the first year a new or revised standard goes into effect. See 50 FR 35374, 35376 (August 30, 1985), and 50 FR 9204, 9206 (March 6, 1985).

The first criterion, as with the other two criteria, reflects the key concepts underlying the NCP program – NCPs are designed to address situations where technological laggards are likely to develop in response to the adoption of technology forcing emission standards for this sector under CAA section 202(a)(3)(A). One purpose of section 206(g) is to avoid, at least temporarily, the problem of technological laggards being driven out of the market because of their inability to meet technology forcing emission standards in the lead-time provided. 50 FR 9204, 9205 (March 6, 1985), 50 FR 35375 (August 30, 1985) ("The possibility of a technological laggard is a key concept in the NCP availability scheme."). The first criterion is directly linked to this - "This

hydrocarbons with the methane emissions subtracted out. For typical on-highway diesel fueled heavy-duty engines, methane emissions are on the order of 10 percent of the total hydrocarbon emissions.

condition creates the possibility for a technological laggard to exist." 50 FR 9204, 9206 (March 6, 1985).

Given this purpose, the appropriate way to consider whether the new or revised standard is more stringent is to consider it from the point of adoption of the standard, by comparing it to the prior standard. It is at the point that EPA has adopted a standard that may force technology changes, and it is the difference in stringency between the old and the new or revised standard, that raises the possibility of a technological laggard. The passage of time after adoption of the standard does not change the analysis of whether the new or revised standard is or is not more stringent than the previous standard. 50 FR 9204, 9206 (March 6, 1985). Even if EPA considers NCPs some model years after adoption of the standard the comparison under the first criterion is still between the new or revised standard and the prior standard, and their relative stringency.

The first criterion establishes one circumstance that must occur to establish NCPs under the generic rule: a new or revised standard must be more stringent than the previous standard for the pollutant, or an existing standard must become more difficult to achieve. The passage of time by itself, from MY2010 to MY2012, does not change the fact that the MY2010 NOx standard was and continues to be more stringent than the standard applicable to model years before 2010, and this increase in stringency created the possibility for a technological laggard to exist. The first criterion is thus more in the nature of a static or historic fact, a threshold determination typically made based on the facts in existence at the time of adoption of the new or revised standard, a comparison of the stringency of the previous and the new or revised standard.

Based on this, EPA rejects commenters' arguments. Even though the determination on the first criterion is not being made until some model years after adoption of the 2010 standard, the 2010 NOx standard has always been a new or revised standard compared to the prior standard, and the 2010 standard was and continues to be more stringent than the preexisting NOx standard. The passage of time does not change the fact that adoption of a more stringent standard for MY2010 created the possibility for a technological laggard to exist. The 2010 standard is certainly a new or revised standard and certainly is more stringent than the previous standard for NOx. The fact that we are now in MY2012 does not change this conclusion.

B. Second criterion - whether substantial work will be required to meet the MY2010 NOx standard

Under the second criterion, substantial work must be required to meet the standard. When we first established the 2010 NOx standard, we considered it to be a technology-forcing standard and subsequent history has shown that substantial work has been required to meet this emission standard. More importantly, all heavy heavy-duty diesel engines currently certified to the 0.20 g/bhp-hr standard without using credits are using new aftertreatment systems (that were generally not used in 2009) to meet this standard.⁶ Indeed, even Navistar substantially redesigned its emission control system in its attempt to achieve lower emissions without NOx aftertreatment. This work clearly

⁶ For this Final Rule, EPA describes those manufacturers that have achieved the 0.20 g/hp-hr emission standard as "conforming", "compliant" or "complying" manufacturers, and those that have not as the "nonconforming", "noncompliant" or "noncomplying" manufacturers. However, it is important to clarify that manufacturers certifying above the 0.20 g/hp-hr NOx emission standard using emission credits are in compliance with regulations as long as they have enough emission credits to offset their total NOx emissions above the standard.

meets the definition of substantial work, as it involves the use of either: new catalytic controls and related technology not previously used in these engines, or the significant modification of existing EGR and related technology. None of the complying manufacturers dispute that they have done substantial work to achieve the 0.20 g/bhp-hr NOx standard. In fact, they emphasized in their comments how much work they have done to meet the standard.

The second criterion builds on the first criterion, as it involves an evaluation of the nature and degree of the technological challenge of the new or revised standard. If the new or revised standard increases the stringency to such a degree that it cannot be met by simple modifications to existing technology (i.e., that substantial work will be required to comply), then this criterion is satisfied. Like the first criterion, the second criterion reflects the key concern with the issue of a technological laggard - “When manufacturers must perform substantial work, it is possible that at least one will be unsuccessful and will become a laggard.” 50 FR 9204, 9206 (March 6, 1985). Like the first criterion, it is a determination of circumstances that establish a threshold or baseline for setting NCPs under the generic rule. It identifies circumstances that mean there is *a possibility* that a laggard may exist.

Given this purpose, the appropriate way to consider the second criterion is to evaluate all of the work that must be accomplished to move from compliance with the previous standard to compliance with the new or revised standard. The possibility of a technological laggard is created by this entire amount of work that must be done, not any one subset or increment of the work. Thus, if EPA evaluates this criterion at some point after adoption of the new or revised standard, EPA still considers all of the work to go

from the previous to the new or revised standard, and not just the work remaining as of the date the determinations are made about compliance with the criteria under the generic NCP rule.

While commenters did not dispute that substantial work was required to meet the 2010 standard, some commenters claim *it is no longer true* that substantial work is required because some manufacturers have met the standard. Some commented that these determinations must be based on the factual circumstances at the time of the NCP rulemaking and not the time the revised standard was issued. We disagree with these claims for two reasons.

First, this criterion is to be evaluated based on the total amount of work needed to go from meeting the previous standard to meeting the current standard, regardless of the timing of such changes. Indeed, the commenters' approach would seem to be directly contrary to the purpose of the statute. The NCP program is designed to allow technological laggards to be able to certify engines even if other manufacturers have met the standard. There is a clear expectation that some manufacturers might be technological laggards. 50 FR 9204, 9206 (March 6, 1985) ("When manufacturers must perform substantial work, it is possible that at least one will be unsuccessful and will become a laggard.") Where there is a technological laggard, it is the typical situation that other manufacturers have already complied or will comply on time. The fact that some manufacturers have surpassed the technological hurdles and achieved compliance with the new or revised standard does not in any way show that there is or cannot be a technological laggard who at least temporarily has not surpassed the technological hurdles. Refusing to establish NCPs solely because some manufacturers comply at the

time NCPs are established would frustrate Congress' purpose by preventing establishment of NCPs when there is a technological laggard who temporarily can not comply with the standards and cannot certify engines without the NCP program.

Thus, EPA bases the determination of substantial work on the total amount of work to go from compliance with the prior standard to compliance with the new standard, even if at the time of the NCP rulemaking some manufacturers have already completed some or all of such work. Under this criterion, the important question is whether manufacturers who were using technology that met the previous standard would need to conduct significant work to develop new technology or to build upon/change the old technology to meet the revised standard. Questions about work that still needs to be done *at the point EPA begins an NCP rulemaking* are relevant only in the context of the third criterion, whether there is likely to be a technological laggard. To avoid this confusion for future NCPs, we are clarifying in the regulatory text that this criterion is to be evaluated based on the need for new or modified technology or design to meet the new or revised standard regardless of the timing for such changes.

Second, even under the current circumstances, we find that Navistar has needed to do substantial work to meet the standard. This is the case whether one considers the total amount of work to go from the previous standard to the MY2010 NOx standard, or whether one only considers the amount of work to go from the current status of its technology to compliance with the MY2010 standard. See the discussion below concerning the work conducted by Navistar to date and expected in the future.

We informed engine manufacturers in 2010 that we believed the first two criteria had been met.⁷ We note that the commenters now questioning whether these criteria have been met did not dispute our earlier view that we could have set NCPs at that time had we determined that a technological laggard was likely to develop. At that point, EPA was clear that the reason we were not establishing NCPs at that time was because we had not determined that a technological laggard was likely to develop.

C. Third criterion – whether there is likely to be a technological laggard.

Under the third criterion, EPA considers all of the circumstances to determine whether there is *likely to be* a technological laggard. In the 1985 generic rule EPA indicated that:

Third, EPA must find that there is likely to be a technological laggard. Even when a standard becomes more stringent (or there is an adverse effect on a previously attainable standard), and even when manufacturers must perform substantial work, all manufacturers may still be able to meet the more stringent standard. For instance, compliance with a standard may involve merely the transference of technology from a similar application. Thus, EPA must make a determination whether the circumstances will likely give rise to a laggard.
50 FR 9204, 9206 (March 6, 1985).

One of the concepts underlying a technological laggard is that a manufacturer faced with a new or revised standard, especially one that is technology forcing, will direct substantial resources and effort to develop and employ technology aimed at achieving compliance with the more stringent standard. Whether the manufacturer develops and employs the same or different technology than other manufacturers, there is a possibility

⁷ “Nonconformance Penalties for Heavy-Duty Diesel Engines in 2010 Model Year”, Letter from Karl J. Simon, Director, EPA Compliance and Innovative Strategies Division, February 22, 2010.

that such a manufacturer will be temporarily unable to achieve the emissions standard in the lead time provided based on technological reasons. Instead of refusing to certify the manufacturer's engines, and driving them out of the market, the NCP program is specifically designed to provide a temporary path for certification until the remaining technological issues are resolved and the manufacturer achieves the standard. 50 FR 9204 (March 6, 1985). The third criterion is designed to implement this concept, based on EPA's evaluation of all of the circumstances.

In this case, all of the circumstances indicate that there is more than a likelihood that there is an engine manufacturer that has not yet achieved the MY2010 NOx standard for technological reasons - we have determined that Navistar is *in fact* such a manufacturer. Unlike the rest of the industry, Navistar attempted to comply without SCR to reduce NOx emissions.⁸ However, to date Navistar has not succeeded in reaching the 0.20 g/bhp-hr emission level. At this time, the only engine families Navistar has certified since the MY2010 standard took effect have used advanced EGR technology, and have been certified based on either banked emission credits or on Navistar's payment of the interim NCPs. Navistar does not have sufficient credits to cover its entire model year 2012 production without NCPs. Navistar has acknowledged in its public comments on this rule that it is effectively a technological laggard. On July 6, 2012, Navistar announced that it has begun the process of redesigning its trucks to use SCR engines in addition to their in-cylinder emission control technology. Navistar expects the SCR engines to be available beginning in early 2013. We have determined that Navistar will need access to NCPs to lawfully produce engines during this multi-month transition

⁸ This technology is based on internal engine controls and advanced exhaust gas recirculation technology.

process.

Several commenters noted that Navistar cannot be a technological laggard as it has applied for certification of an engine family using this technology, seeking a certificate for a 0.20 g/bhp-hr engine that complies without the use of credits. However, Navistar has withdrawn that application based on EPA concerns that the engine design (with its current hardware) does not meet the 0.20 g/bhp-hr NOx standard.

While Navistar has announced that it will switch to SCR-based emission controls, we have determined that the work needed for Navistar to redesign all of its U.S. engines and vehicles for its announced alternate compliance path based on SCR cannot be completed immediately. Thus, Navistar will need NCPs during this transition period. These limitations are technological rather than economic in nature. Among the steps Navistar must complete, it must:

- Select an SCR system design
- Make arrangements with component suppliers
- Validate components
- Recalibrate its engine to work with the SCR system
- Redesign its trucks to fit the SCR hardware
- Complete its emission testing and durability testing for certification
- Obtain EPA approval for the new engine-SCR system

We do not have a precise estimate of how long this will take for Navistar's entire U.S. production of heavy-duty diesel engines and associated vehicles. However, based on our experience and knowledge of this industry, this type of technology introduction is not finished in a one or two month period. Navistar has acknowledged as much in their July 6, 2012 announcement, which stated they will begin making the new technology

products available in early 2013.

Several commenters argued Navistar voluntarily chose a different technology path than other manufacturers, and could have complied in the lead time provided if it had developed and employed SCR technology from the beginning. Since Navistar chose what the commenters consider to be the wrong technology path, they argue it is a laggard based on its own business decision and not technological limitations. They stated that NCPs should not be established under these circumstances. We generally would agree with commenters' assertions that Navistar presumably could have chosen the same SCR technology path as other manufacturers some time ago, and presumably could have already achieved compliance with the MY2010 standard in the same time frame they did. If that had occurred, there would be no basis for establishing NCPs. However, we disagree with commenters' conclusions that NCPs should not be established based on this difference in choice of technology pathway.

Navistar made a decision to attempt to meet the emission standard using a different technology path, without SCR. As with most of EPA's mobile source emissions standards, the MY2010 emission standard is a performance standard, and does not specify what technology must be used or require that all manufacturers use the same technology. Commenters' approach would penalize a manufacturer who attempts to innovate and develop a technology pathway different from its competitors. This would effectively discourage technological innovation by requiring all manufacturers to use the same technology once one manufacturer has met the standard using that technology. Otherwise they would risk being driven from the market as no NCPs would be established. Such an interpretation would undercut the purpose of technology forcing

standards – to adopt standards where manufacturers may have to develop advanced technology or technology that is at the cutting edge of emissions control. This interpretation would suppress technological innovation out of fear that a wrong technological choice will lead to having to leave a market without the temporary benefit of NCPs. This approach would also ignore the premise of promulgating NCPs, which is that they are appropriate when one or more manufacturers have not met the standard, while one or more others have. Whether the laggard is not able to achieve compliance because of a technological hurdle in developing the same or different technology as their competitors, the result is the same – they risk being removed from the market based on technological issues, if NCPs are not established. EPA does not see a valid basis for drawing such a distinction between technology pathways in deciding whether there is likely to be a technological laggard.

As discussed later, in Section V. on the penalty rate, the provision of NCPs is only a temporary solution for the noncomplying technological laggard. The first-year penalty rate is designed to remove the economic disadvantage for the complying manufacturers, preventing harm to the competitors. The NCP rate also increases over time, such that in a short period of time the noncomplying manufacturer needs to achieve compliance or the increasing penalty rate will in effect drive it from the market. Since the NCP protects a complying manufacturer from a competitive disadvantage irrespective of the technology path chosen by its competitor, it is appropriate that EPA not draw a distinction based on whether the technological laggard chose the same or a different technology path than the complying manufacturers. This helps to preserve the nature of EPA’s standards as technology forcing performance standards that promote technological

innovation across this sector of industry.

Having made its decision to pursue a non-SCR technology to meet the standards, Navistar has not been able to produce engines that have been certified to meet the 0.020 standard without credits. The evidence is clear that Navistar chose to develop a different technological solution than other manufacturers, and that technological issues concerning this solution have delayed Navistar's ability to meet the standard. It is for this technological reason that Navistar cannot meet the standard, not for economic reasons.

D. Issues Raised by the DC Circuit Court of Appeals

As noted above, in Mack Trucks, et al v. EPA, No. 12-1077 (D.C. Cir), the court included comments in its opinion, in dicta, concerning the appropriateness of NCPs under the circumstances presented in the Interim Final Rule. The court stated that:

We do recognize the pending final rule means our vacatur of the IFR on these procedural grounds will be of limited practical impact. Before the ink is dry on that final rule, we offer two observations about the parameters of this rulemaking. First, NCPs are meant to be a temporary bridge to compliance for manufacturers that have “made every effort to comply.” United States v. Caterpillar, Inc., 227 F. Supp. 2d 73, 88 (D.D.C. 2002). As EPA itself has explained, NCPs are not designed to bail out manufacturers that voluntarily choose, for whatever reason, not to adopt an existing, compliant technology. See 77 Fed. Reg. 4,736, 4,739 (Jan. 31, 2012) (“NCPs have always been intended for manufacturers that cannot meet an emission standard for technological reasons rather than manufacturers choosing not to comply.”); 50 Fed. Reg. 35,402, 35,403 (Aug. 30, 1985) (stating that NCPs are inappropriate “if many manufacturers’ vehicles/engines were already meeting the revised standard or could do so with relatively minor calibration changes or modifications”). Based solely on what EPA has offered in the IFR, it at least appears to us that NCPs are likely inappropriate in this case.⁹

The court noted that NCPs are intended to be a temporary bridge to compliance for manufacturers who have “made every effort to comply” and are not designed for

⁹ Id., slip op. at 15.

manufacturers that voluntarily choose, for whatever reason, not to adopt an existing, compliant technology. EPA agrees with these general concepts, but they do not apply in this case. The court's comments concern the issue of whether substantial work is needed to achieve compliance with the MY2010 NOx standard, and whether Navistar is properly considered likely to be a technological laggard in achieving compliance with this standard in light of the technology pathway it chose. Based on all of the circumstances before EPA, it is reasonable to determine that Navistar has made every effort to comply for the technology pathway it chose. The need for NCPs is based on the failure to achieve the emissions standards using this technology. This failure is based on technological reasons, and not other reasons.

The court's statement that NCPs were intended for manufacturers that "made every effort to comply" (United States v. Caterpillar, Inc., 227 F. Supp. 2d 73, 88 (D.D.C. 2002)) was made in a different context and does not apply here. This comment was in response to a suggestion from Caterpillar in that earlier case that the consent decree at issue should have been interpreted in a certain way (or modified) as EPA failed to issue an NCP rule with enough lead time. Caterpillar argued that it was harmed by this delay because the purpose of the NCPs was to allow a manufacturer to weigh the costs of compliance against the costs of paying NCPs. The court rejected this view, as it would allow "engine manufacturers ... to calibrate the intensity of their compliance efforts to the NCP for each new standard, allowing them to opt for noncompliance when compliance becomes more expensive than the NCP. This kind of second-guessing, however, was clearly not Congress' intent in providing for NCPs." 227 F.Supp. at 88. The court noted that "[i]nstead, NCPs were intended to give a manufacturer that has

made every effort to comply, but has been unable to achieve compliance, a chance to continue to participate in the market. Thus, NCPs serve their purpose even if promulgated after a company has made its engine design decisions, since those decisions should be based on whether compliance can be achieved, not on whether compliance is less expensive than paying NCPs.” Id. at 88-89.

In that context, it is clear that the court’s prior statement addressed the claim that a manufacturer should be able to base their engine design decisions on the availability of NCPs, weighing which costs more and deciding based on this whether to pursue a technology pathway to compliance or pay NCPs. The court made clear that providing this kind of economic choice on compliance is not the purpose of an NCP. The court specifically noted that NCPs are appropriate in a case where the failure to achieve compliance is based on technological concerns encountered along the path to achieving compliance – that is, in circumstances like those in this current rulemaking.,.

The court’s statement was not related to whether, *evaluating in retrospect at the point an NCP is established*, a manufacturer had made every effort to comply prior to adoption of the NCPs. Navistar chose to pursue an engine emissions control design that is non-SCR based several years before NCPs were proposed. NCPs would be used by Navistar while it addresses the technology-based hurdles it now faces in switching to SCR controls. It faces these technology hurdles now as a result of the technology pathway it chose years before the NCP was adopted. The NCPs would not be used, as Caterpillar asked the court to allow in the earlier case, to decide what technology path to follow and how hard to pursue it based on the economics of the cost of NCPs. In this case, Navistar made considerable efforts to develop and employ the non-SCR technology.

Its choice of technological pathway to compliance was not based on weighing the costs of compliance with the cost of NCPs. The court’s concerns in Caterpillar are not applicable to the facts in this NCP rulemaking.

The court also quoted from the generic 1985 rulemaking, noting that NCPs would not be appropriate if “many manufacturers were already meeting the standard, or could do so with relatively minor calibration changes or modifications.” This language from the 1985 rulemaking refers to the second criterion, whether substantial work is required to achieve compliance with the more stringent new or revised standard. As discussed above, this is based on all of the work that must be done to move from the previous standard to the more stringent new or revised standard. This criterion is to be evaluated based on actual work needed to go from meeting the previous standard to meeting the current standard, regardless of the timing of such changes. Based on this, the amount of work remaining to be done when the NCP rulemaking occurs is not relevant to the second criterion. Likewise, whether some manufacturers have already achieved compliance at the time of the NCP rulemaking is also not relevant to determining whether the second criterion has been met. As noted above, it is not unexpected that at the time of this NCP rulemaking that “many manufacturers’ vehicles/engines were already meeting the revised standard or could do so with relatively minor calibration changes or modifications.” However, rejecting NCPs solely because some manufacturers have achieved or are on a path to achieve compliance, while one or more other manufacturers are not in the same position, would prevent lagging manufacturers from certifying in exactly those circumstances Congress contemplated providing for NCPs – some manufacturers are able to achieve compliance in the lead time provided, but for technological reasons others are

not. NCPs are designed to address just this situation, to temporarily avoid driving these manufactories out of the market. 50 FR 35374 (August 30,1985).

Clearly, in this case, substantial work was required to meet the 0.20 g/bhp-hr standard. Every manufacturer has included (or will soon include) for the first time NOx aftertreatment (selective catalytic reduction), on their engines to meet the standard. Prior to deciding to change its technology approach, Navistar also greatly modified its exhaust gas recirculation (EGR) system to reduce NOx emissions and would likely have needed to do significantly more work to further reduce its NOx emissions to meet the standard. These are substantial changes to the emission control systems of these engines. While several manufacturers are currently using SCR systems, they were not doing so until they were required to meet the 2010 NOx standard. Therefore, it is clear that substantial work was needed to go from the previous standard to achieve compliance with the 2010 NOx standard, and the second criterion is satisfied.

The court also noted that NCPs are not intended in a situation where the failure to achieve compliance is not related to technological reasons, but to a manufacturer's choosing to not employ an available complying technology. As discussed above, EPA agrees that the basis for establishing NCPs must be a *technological based* laggard. The reasons for not achieving the emissions standard in the lead time provided must be based on a technological failure in developing and employing the chosen technology pathway. The court refers to a statement made by EPA when discussing the relationship between NCPs for the 2010 NOx standard and credits for the CO2 emissions standards adopted for

heavy-duty engines and trucks.¹⁰ 77 FR 4739 (January 31, 2012). EPA stated it was not providing NCPs for the new CO₂ emissions standard as it was not in a position to determine that a technological laggard was likely to develop for that CO₂ standard. In that context, EPA also determined that an engine that was certified to the 2010 NO_x standard using NCPs should not be able to generate credits at the same time under the CO₂ emissions standards. EPA recognized that there was an interplay between NO_x control and CO₂ control, such that higher levels of NO_x could lead to lower levels of CO₂ emissions. Under those circumstances, providing credits for the CO₂ program could provide an incentive for a manufacturer to increase NO_x emissions but still certify an engine using NCPs, where they could otherwise achieve the NO_x standard without NCPs. That manufacturer could then generate credits under the CO₂ program for the decrease in CO₂ emissions resulting from the increase in NO_x emissions. Thus, the manufacturer would be *choosing* to not comply with a standard for which it was technologically capable of complying, and would be doing so to generate emission credits that would provide it some advantage in the future. This would not be consistent with either the purpose of the CO₂ credit program (to provide an incentive for manufacturers to take technological and other efforts to over comply with the CO₂ standard) or the purpose of the NCP program (to provide relief to manufacturers that fail to achieve the standard on time for technological reasons, not for other reasons such as the economic benefit of generating CO₂ credits by voluntarily increasing emissions of NO_x).

¹⁰ EPA stated “NCPs have always been intended for manufacturers that cannot meet an emission standard for technological reasons rather than manufacturers choosing not to comply.”

EPA's observation in the proposal confirmed that the basic purpose of NCPs is to provide relief where there is a laggard for technological reasons, not other reasons. The concerns raised regarding CO₂ credits and NOx NCPs are not related to our finding that Navistar is a technological laggard. No one argues that Navistar has failed to achieve a technological solution because of a decision to generate credits or reap economic benefits elsewhere. Instead Navistar's failure to achieve the standard as of this date is based on technological and not other reasons.

This is similar to the circumstances in 2002 when Caterpillar developed its "ACERT" technology rather than use cooled EGR technology, which it had been developing until 2001. It needed to use NCPs because of delays in developing ACERT. In that case, Caterpillar did not dispute that cooled-EGR would achieve the necessary emission reductions; rather it chose to attempt to meet the standard using what it believed to be a superior technology.

The court also noted its concern with the level of the penalty in the Interim Final Rule, and whether it adequately removed the economic disadvantage to conforming manufacturers. That issue is addressed in Section V. below.

V. Penalty Rates

This rulemaking is the most recent in a series of NCP rulemakings. These are referred to as Phases and are referenced below.¹¹ The discussions of penalty rates and related reports and analyses in those rulemakings are incorporated by reference. This section briefly reviews the penalty rate formula originally promulgated in the Phase I rule

¹¹ The previous NCP rules include: the Phase VI rulemaking (67 FR 51464, August 8, 2002), Phase IV rulemaking (58 FR 68532, December 28, 1993), Phase III rulemaking (55 FR 46622, November 5, 1990), the Phase II rulemaking (50 FR 53454, December 31, 1985) as well as the Phase I rulemaking (50 FR 35374, August 30, 1985).

(currently found at 40 CFR 86.1113-87) and discusses how EPA arrived at the penalty rates in this Final Rule.

The penalty rates being established in this rule rely on the existing NCP regulatory structure. Only a few changes are being made to the regulations. As proposed, we are setting of the upper limit at 0.50 g/hp-hr and are clarifying in §86.1104-91 that EPA may set the upper limit at: (1) a level below the previous standard if we determine that the lower level is achievable by all engines, or (2) a level above the previous standard if we determine that the standard is not achievable by all engines. We also proposed cost parameters to reflect the compliance costs for the 2010 standards and are finalizing these cost parameters, after revising them based on comments. Finally, in response to comments, we are clarifying that the second NCP criterion is to be evaluated without regard to the specific timing of the NCP rule.

We received many comments supporting higher or lower penalties for a variety of reasons. However, the most important criteria in evaluating the penalties are how they conform to the statutory requirements and how they conform to the regulatory requirements. With respect to the statutory requirements for the penalties in the first year, we note that the purpose of adopting NCPs is to allow a noncompliant manufacturer to continue selling its engines, provided it pays the penalty. However, section 206(g) of the Clean Air Act directs EPA to set the NCPs at a level that will “remove any competitive disadvantage” to complying manufacturers. Contrary, to what some commenters suggested, this first year penalty level is not intended to punish the noncomplying manufacturer beyond the level needed to remove any competitive disadvantage for complying manufacturers.

EPA has also set regulatory requirements for penalty levels. Most significantly, the regulations require that penalties be based on total incremental costs of compliance relative to engines at the upper limit, which we have done. In the first NCP rule, it was determined that compliance cost differences between engines at the upper limit and engines at the standard would be appropriate measures of the competitive disadvantage for complying manufacturers.¹² We believe that the final NCPs being established conform to both the regulatory requirements and the statutory requirements.

The NCP rates being adopted in this FRM are specified for model year 2012. As required by section 206(g) of the Act, the existing regulations include a formula that increases (or “escalates”) the penalty rates with each new model year. The purpose of the escalator is to provide an incentive for manufacturers who use NCPs for more than one model year to achieve compliance quickly rather than continuing to use NCPs for multiple model years.

As proposed, we will apply this annual adjustment formula to the NCPs by setting the 2012 model year as year number one. This is consistent with the existing regulatory text that states that year one is the first year that NCPs are available (see 40 CFR §1113-87(a)(4)). Traditionally, when NCPs are adopted, they are available the first model year the new or revised emission standard applies and there is no question about which model year should be year one for purposes of the annual escalator. However, this is less straightforward for this NCP rule. First, the 0.20 g/bhp-hr first applied beginning in the 2007 model year, as part of a phase-in, but did not take full effect until MY2010. In

12 While we have followed the regulatory formula for determining penalties for this rule, it should be noted that if we were to find that conforming to the regulatory requirements would not conform to the statutory requirements, we would need to revise the regulatory requirements through rulemaking.

addition, we are adopting NCPs more than two model years later. While we received comments supporting setting 2010 as the base year, we continue to believe the 2012 model year is the correct year for the first year of the escalator calculation. As discussed further in the Response to Comments document, we are not revising the regulatory text that specifies that year one is the first year that NCPs are available. Using the first year of NCP *availability* as the first year for the escalator calculation, the initial NCPs (i.e., NCPs during the first model year of availability) remove the disadvantage for the complying manufacturers, as Congress intended. Under this approach, the escalator would apply starting in MY2013, the earliest that any manufacturers could be using NCPs for more than one model year. This ties the initiation of the escalator, and the start of the economic incentive it provides, to the first year in which circumstances that call for such an incentive can exist – the second year of availability. MY2013 is the first year any manufacturer could use this NCP for multiple years. Adding an extra penalty equivalent to two years of escalation is contrary to the intent for this escalation. No manufacturer had access to NCPs prior to 2012, and requiring an escalator based on the two previous years of the standard would treat a manufacturer who uses NCPs in either 2012 or 2013 as if they had already used NCPs for several more years than the actual usage. The additional escalator and related additional incentive is more than is needed to meet the objective of the escalator provision, and therefore is consistent with the purpose of the escalator provision.

We are specifying the NCP formula using the normal NCP parameters: COC₅₀, COC₉₀, MC₅₀, F, and UL. The NCP formula is the same as that promulgated in the Phase I rule. As was done in previous NCP rules, we consider incremental manufacturer costs

and incremental owner costs (for complying engines relative to the upper limit), but do not consider certification costs because both complying and noncomplying manufacturers must incur certification costs. COC₅₀ is an estimate of the industry-wide average incremental cost per engine (references to engines are intended to include vehicles as well) associated with meeting the standard for which an NCP is established, compared with meeting the upper limit. COC₉₀ is an estimate of the 90th percentile incremental cost per engine associated with meeting the standard for which an NCP is established, compared with meeting the associated upper limit. Conceptually, COC₅₀ represents costs for a typical or average manufacturer, while COC₉₀ represents costs for the manufacturers with the highest compliance costs.

MC₅₀ is an estimate of the industry-wide average marginal cost of compliance per unit of reduced pollutant associated with the least cost effective emission control technology installed to meet the new standard. MC₅₀ is measured in dollars per g/bhp-hr for heavy-duty engines. F is a factor used to derive MC₉₀, the 90th percentile marginal cost of compliance with the NCP standard for engines in the NCP category. MC₉₀ defines the slope of the penalty rate curve near the standard and is equal to MC₅₀ multiplied by F. UL is the upper limit above which no engine may be certified.

The derivation of the cost parameters is described in a support document titled “Technical Support Document: Nonconformance Penalties for 2012 and later Highway Heavy-Duty Diesel Engines” (Technical Support Document), which is available in the public docket for this rulemaking. All costs are presented in 2011 dollars. The Technical Support Document also includes alternative cost analyses that were considered. These alternative analyses are discussed in Section V.D of this preamble.

A. Upper Limit

The upper limit (UL) is the emission level established by regulation above which NCPs are not available. A heavy duty engine cannot use NCPs to be certified for a level above the upper limit. CAA section 206(g)(2) refers to the upper limit as a percentage above the emission standard, set by regulation, that corresponds to an emission level EPA determines to be “practicable.” The upper limit is an important aspect of the NCP regulations not only because it establishes an emission level above which no engine may be certified using NCPs, but it is also a critical component of the cost analysis used to develop the penalty rates. The regulations specify that the relevant costs for determining the COC₅₀ and the COC₉₀ factors are the difference between an engine at the upper limit and one that meets the applicable standards (see 40 CFR 86.1113-87).

The regulatory approach adopted under the prior NCP rules sets the upper limit at the prior emission standard when a prior emission standard exists and is then changed to become more stringent. EPA concluded that this upper limit should be reasonably achievable by all manufacturers with engines or vehicles in the relevant class. It should be within reach of all manufacturers of HDEs or HDVs that are currently allowed so that they can continue to sell their engines and vehicles while finishing their development of fully complying engines. A manufacturer of a previously certified engine or vehicle should not be forced to immediately remove an HDE or HDV from the market when an emission standard becomes more stringent. The prior emissions standard generally meets these goals because manufacturers have already certified their vehicles to that standard.

In the NPRM, we proposed to revise the regulations in §86.1104-91 to clarify that EPA may set the upper limit at a level below the previous standard if we determine that

the lower level is achievable by all engines or vehicles in the relevant subclass. That provision of the regulations was not opposed by any commenters and is included in this final rule. We are also finalizing the upper limit at 0.50 g/bhp-hr, which was widely supported by commenters. For this rule, all manufacturers are currently certifying all of their engines at or below the 0.50 g/bhp-hr FEL cap, providing clear evidence that this level can be met by all manufacturers. The reason EPA has rejected past suggestions that the upper limit should be more stringent than the prior emission standard does not apply here, as there is no difficulty in this case in identifying a limit that could be met by all manufacturers. See 50 FR 35377 (August 30, 1985). Thus, setting the upper limit for this NCP rule at 0.50 g/bhp-hr NOx conforms to the purpose of the upper limit in setting NCPs.

As proposed, we are also specifying that EPA could set the upper limit at a level above the previous standard in unusual circumstances, such as where a new standard for a different pollutant or other requirement effectively increases the stringency of the standard for which NCPs would apply. This occurred for heavy heavy-duty engines with the 2004 standards. While this change would not apply for this current NCP rulemaking, we proposed to add this clarification to make the regulations consistent with past practices.

B. Cost Parameter Values

The regulations being adopted specify that the values in Table 1 be used in the NCP formula for the 2012 and later model year NOx standard of 0.20 g/bhp-hr for heavy heavy-duty diesel engines. The basis is summarized here. The complete derivation of

these parameters and a discussion of other approaches that were considered are described in the Technical Support Document for this rulemaking.

Table 1: NCP Calculation Parameters

<i>Parameter</i>	<i>Heavy Heavy-Duty Diesel Engines</i>
COC_{50}	3,219
COC_{90}	\$3,775
MC_{50}	\$10,729 per g/bhp-hr
F	1.173
UL	0.50 g/bhp-hr

Some commenters argued that EPA should not deviate from prior precedents for calculating costs. However, EPA has not used the same methodology in calculating costs in each of the previous NCP rules. In each of our six previous NCP rulemakings, we estimated costs using a methodology appropriate for the specific circumstances that applied at the time. None were approached in exactly the same way. In each case we considered key factors such as differences in calibration, hardware, and operating costs, but there have been some NCP calculations where other potential individual cost or cost saving elements have been included or excluded for various reasons. In determining how to calculate costs of compliance, EPA considers not only what data are available, but also the extent to which each cost element may affect the competitive balance of the market.

The NCP parameters being finalized were developed using the same basic methodology described in the NPRM. As in all NCP rules, the final NCPs are based on the estimated difference in compliance costs for engines at the upper limit and engines at the standard. Thus, engines with emissions at the upper limit can be considered to be baseline engines for the analysis. These baseline engines also represent the engines against which complying engines could compete in the marketplace. In this analysis, the most important baseline engine is the engine used as the baseline for calculating the nominally worst case compliance costs (COC_{90}). As is described later, because the penalty curve being finalized in this NCP rule is a straight line, the value of COC_{50} does not affect the penalty curve.

The cost parameters being finalized are higher than the values proposed. These changes reflect new information received during the public comment period, most notably new updated information about fuel and DEF prices that was not available at the time we completed the cost analysis for the proposal. EPA also received comments suggesting that the effectiveness of the heavy heavy-duty NCPs in meeting the statutory requirement to remove competitive disadvantage for complying manufacturer needs to be evaluated relative to engines that could be developed in the near term (such as a reoptimized SCR engine). In response to these comments and the new information received, EPA is revising the COC₉₀ baseline engine because we believe that the revised baseline engine better represents an optimized engine than the baseline engine used for the proposal. These changes are discussed in more detail below.

The Clean Air Act's requirements to "remove any competitive disadvantage" to complying manufacturers effectively requires EPA to consider not only existing engines with NOx emissions over the standard, but also engines that could reasonably be developed during the period in which NCPs are available. Thus, the NCPs must be high enough to protect complying manufacturers from a competitive disadvantage relative both to SCR engines that are optimized to emit NOx at a level of 0.50 g/bhp-hr and to engines without SCR that emit at that level. We considered several methodologies for estimating the incremental compliance costs between the upper limit and the standard and selected the approach that best removes the potential competitive disadvantage for complying manufacturers. See Section V. D. for additional discussion of these alternate approaches.

It is important to note that while we received comments stating that the level of our proposed NCP was not high enough to remove the competitive advantage Navistar has selling non-SCR engines, none of the commenters provided evidence that this was the case (such as evidence of increased market share or increased profits for Navistar). None of the commenters provided any method by which the value of Navistar's actual competitive advantage could be calculated. Nevertheless, we have determined based on the information available to us that Navistar's competitive advantage is not greater than the competitive advantage based on compliance costs that we calculated relative to the reoptimized SCR baseline engine we have used as the basis of our COC₉₀ costs.

(1) General Methodology

Our approach to estimating compliance costs differs slightly from that used in recent NCP rules, where EPA based the NCPs directly on the actual compliance cost increases associated with meeting the standard for complying manufacturers (borne by the complying manufacturers and the operators who purchase their compliant engines), whether provided by the manufacturers or estimated by EPA. This was appropriate in those prior rules because each of the manufacturers had actually produced engines at the upper limit (which was usually the previous emission standard) and had reengineered those engines to meet the new or revised standard, so the costs associated with that change were straightforward to calculate. We determined that the manufacturers' input accurately reflected the manufacturers' actual costs because the costs were derived directly from actual in-production engine information. In the case of this NCP rule, however, compliant manufacturers have generally not designed and optimized their in-production engines for the U.S. market at 0.50 g/bhp-hr NOx (the upper limit) and then

reengineered their engines to meet the 0.20 g/bhp-hr standard.¹³ Thus, a compliance cost estimate based directly on actual experience for the full range of in-production engines was not available for this NCP rule.

Instead of averaging actual cost increases relative to the upper limit (because none were available), the NCP penalty formulas for this rule are based primarily on EPA's estimate of the cost difference between a hypothetical engine emitting at the upper limit (the "baseline engine") and one emitting at the standard (the "compliant engine"). We received compliance cost information from several engine manufacturers, both before the proposal and during the comment period, and used that information to inform our own analysis of compliance costs, as described in the Technical Support Document.

It is worth noting that each of the engine manufacturers that provided cost information before the proposal considered baseline engines with different technology packages. However in their comments on the proposal, complying manufacturers based their compliance costs on either a baseline engine equipped with similar hardware as EPA's revised baseline engine, or based on a pre-2010 non-SCR engine with NOx emissions near 1.2 g/bhp-hr. See Section V. D. of this notice for a discussion of why using the 1.2 g/bhp-hr baseline engine is not appropriate.

¹³ Note that Cummins is using emission credits to certify one *medium heavy-duty* engine family with a NOx FEL at 0.50 g/hp-hr. While costs associated with this *medium heavy-duty* engine cannot be used directly for *heavy heavy-duty* engines, as described in the Final TSD, related confidential cost information provided by Cummins was used to significantly inform our cost analysis.

As noted earlier, with NCPs available, a complying manufacturer could compete against not only EGR-equipped engines, but also against SCR-equipped engines that could be reoptimized to emit at 0.50 g/hr-hr. Since engine manufacturers are not currently producing SCR-equipped heavy heavy-duty engines at the upper limit, such engines must be considered based on our best estimate of how such an engine would be manufactured. Based on our review of the various hypothetical baseline engine designs, we proposed to use as a baseline engine our best estimate of an optimized SCR engine, because we believed it would be the most competitive 0.50 g/bhp-hr engine. Information available at that time projected little difference when comparing fuel and DEF prices, so for the proposal we assumed the baseline engine would have been optimized to use less DEF compared to 0.20 g/bhp-hr engines but had the same fuel consumption rates.¹⁴ We did not believe there would be a significant difference in costs using a baseline engine optimized for better fuel consumption, because we projected that fuel savings would have been offset by increased DEF costs. As is described in the Technical Support Document, for the proposal we also believed estimating costs by this approach was the least speculative method to determine compliance costs, and we did not believe there were competing designs that were substantially more competitive based on the compliance cost inputs we used.

Based on new information and comments we received, we are revising our baseline engine for the heavy heavy-duty service class. Specifically, as is described

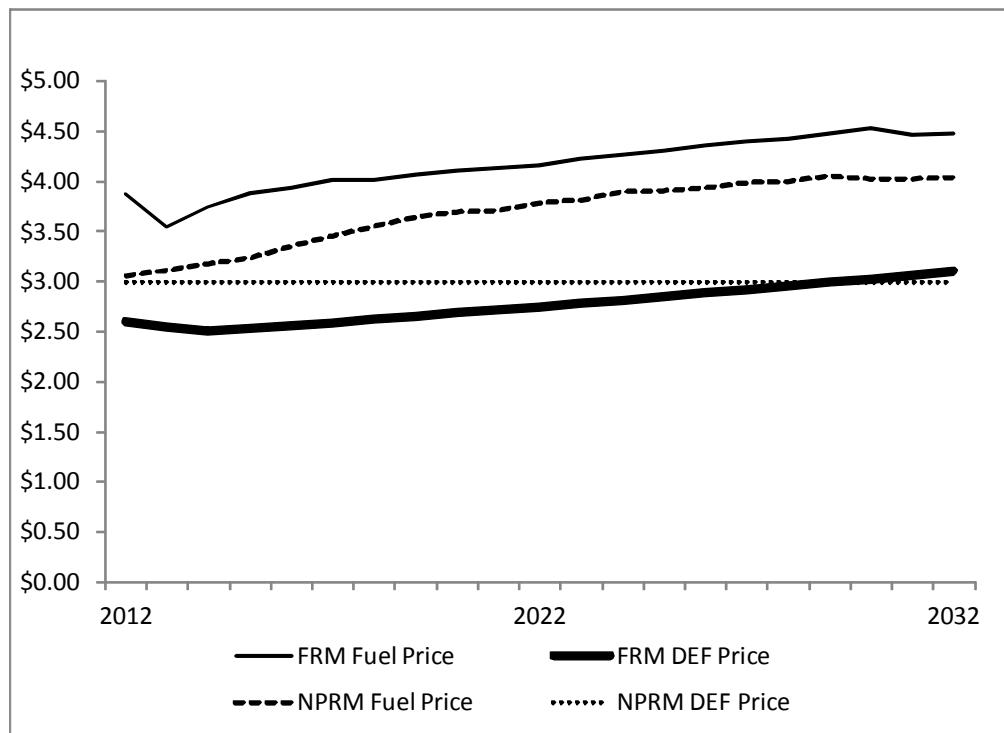
¹⁴ The proposal was based on the Energy Information Administration's 2011 fuel price projections and the retail price of DEF in October 2011; this Final Rule is based on the Energy Information Administration's 2012 fuel price projections and the DEF price projection from Integer Research. See Chapter 3 of the Technical Support Document for additional detail.

below, we are revising the COC₉₀ baseline engine to be more optimized for low fuel consumption at 0.50 g/bhp-hr NOx than was assumed for the proposal. For the proposal, we estimated that reducing NOx emissions from 0.50 g/bhp-hr to 0.20 g/bhp-hr would require an increase in DEF consumption but would not change fuel consumption because we projected that there would be little price difference between DEF and fuel. However, we now have new information indicating that fuel prices will likely be at least one dollar per gallon higher than DEF prices for the foreseeable future. We agree with commenters that engine manufacturers designing engines for 0.50 g/bhp-hr NOx would have responded (and could still respond) to this price difference by optimizing their existing 0.20 g/bhp-hr SCR engine designs to have slightly higher engine-out NOx, which would reduce fuel consumption, and reduce the excess NOx by increasing DEF consumption. Thus compared to this revised baseline engine, a compliant engine would have higher fuel consumption but lower DEF consumption.

We are now projecting that DEF prices will be at least one dollar less per gallon than diesel fuel prices for the foreseeable future (as shown in Figure 2), and the appropriate baseline engine is one that would have been designed to take advantage of this price difference. We have updated our fuel price projections using the Energy Information Administration's (EIA) Annual Energy Outlook 2012 (AEO2012) to project fuel prices through 2035. EIA is now projecting diesel fuel prices will be about fifty cents more per gallon than was projected in 2011. We have also revised our projection of DEF prices based on information from Integer Research provided by commenters. While we proposed using a constant DEF price through 2042 (because we did not have any

projections for future DEF prices at the time we developed the proposal), we are now projecting that DEF prices will fall for the next few years, and then increase as the price of natural gas increases (using AEO2012 projections).¹⁵

Figure 2 Proposed and Final Fuel and DEF Price Projections



The current baseline engine is similar, but not identical, to what we proposed with respect to hardware. As proposed, the baseline engine technology package would employ the same basic emission controls used to meet the 2007 NOx and PM emission standards (e.g. cooled exhaust gas recirculation (EGR), optimized turbo-charging, optimized fuel injection, diesel particulate filters), plus liquid urea based selective catalytic reduction (SCR) NOx emissions control technology with an appropriately sized tank for the liquid

¹⁵ Natural gas is used in the production of urea, a primary component of DEF.

urea (also known as diesel emission fluid or “DEF”). However, we now believe the baseline engine could have used less expensive hardware than we proposed. We continue to believe that manufacturers could reduce the size of the SCR catalyst if they were allowed to meet a higher NO_x emission limit. In addition, we now believe that they could also reduce the precious metal loading of the diesel oxidation catalyst (DOC), and lower the cost of the turbocharger. Thus, the hardware component of the compliance costs has gone up from what we proposed (i.e., the cost of the hardware on the baseline engine has gone down). Further details are provided in this rule’s Technical Support Document.

(a) Calculated Values

The most significant of the NCP parameters is the 90th percentile costs of compliance, COC₉₀, which defines the penalty for engines emitting at the upper limit. The value of COC₅₀ is important only when EPA estimates that marginal compliance costs change as the compliance level approaches the standard. In such cases, COC₅₀ defines that point on the curve at which the slope changes. However, for this NCP rule we believe that because of the narrow emission range between the upper limit and the standard (0.20 to 0.50 g/bhp-hr), it is appropriate to assume that marginal compliance costs are constant. Thus, we are not summarizing our derivation of COC₅₀ in this preamble since its value does not affect the penalty amounts. See the Technical Support Document for a discussion of COC₅₀.

We estimated COC₉₀ by assuming the baseline engine would have been an SCR equipped engine with tailpipe NOx emissions at 0.50 g/bhp-hr and that it would have looked very similar to an engine with tailpipe NOx emissions at 0.20 g/bhp-hr. However, as noted above, the higher NOx emissions of the baseline engine would allow the use of less expensive hardware and would be calibrated to minimize the combined consumption of fuel and DEF. As described in more detail in the Technical Support Document, we estimated reasonable 90th percentile (or worst case) costs associated with bringing such a baseline engine into full compliance with the 0.20 g/bhp-hr NOx emission standard.¹⁶ We note that the *average* costs associated with SCR may well be lower than the 90th percentile costs presented here.

We estimate that the SCR hardware used by a complying manufacturer (i.e., an SCR system that would achieve 0.20 g/bhp-hr NOx) cost the manufacturer \$5,522 per engine for the 90th percentile engine compared to an engine emitting at 1.2 g/bhp-hr. We estimate that the baseline hardware (i.e., an engine and SCR system that would achieve 0.50 but not 0.20 g/bhp-hr NOx) for the 90th percentile engine would have cost the manufacturers only \$4,441 (including R&D, warranty, and other overhead costs) after hardware savings associated with the DOC and turbocharger are deducted. Therefore, the manufacturers would have to spend \$1,081 more in hardware, R&D, warranty and other

¹⁶ The Act requires that we remove competitive disadvantage for complying manufacturers. We recognize that there is uncertainty in our estimates. To ensure that we protect the complying manufacturer our overall approach is somewhat conservative. See the Technical Support Document for additional discussion of how we addressed uncertainty in our estimates.

overhead costs to produce a 0.20 g/bhp-hr engine than it would have cost to produce a 0.50 g/bhp-hr engine. We calculated the difference in operating costs the same way.

These COC₉₀ costs are summarized in the Table 2. The values in the tables are the costs that would be incurred by a manufacturer or operator for a model year 2012 0.20 g/bhp-hr engine relative to a 0.50 g/bhp-hr baseline engine. All operating costs are presented as net present value (NPV) relative to 2012 using a 7 percent discount rate.¹⁷ For example, we estimate that the NPV of the lifetime fuel cost of a 0.20 g/bhp-hr engine would be \$8,833 higher than the fuel cost for a baseline engine, but the NPV of DEF costs would be \$6,191 lower.

Table 2: COC₉₀ Dollar-per-Engine[†] Costs (2011 Dollars)

	FRM COC ₉₀	NPRM COC ₉₀
Lifetime Fuel Costs	\$8,833	\$0
Lifetime DEF Costs (Savings)	(\$6,191)	\$1,374
Hardware Costs	\$927	\$474
Research and Development Cost	\$19	\$9

¹⁷ Penalties are calculated based on costs for a model year 2012 engine. The regulations include separate provisions to increase penalties for later model years.

Warranty and Other Manufacturer Costs	\$135	\$62
Operator Repair Costs	\$52	\$0
Total Cost	\$3,775	\$1,919

[†] Although penalties are accessed per engine, costs include vehicle costs.

We estimated the marginal costs of compliance as being equal to the total incremental costs of compliance divided by 0.30 g/bhp-hr (the difference between the upper limit and the standard). This assumes that the cost to reduce emissions from 0.30 g/bhp-hr to 0.20 g/bhp-hr is not significantly different from the cost to reduce emissions from 0.50 g/bhp-hr to 0.40 g/bhp-hr. This results in a penalty curve that is a straight line, which in turn makes our estimate of the average cost of compliance irrelevant to the calculation of the penalty. In other words, the COC₅₀ point lies directly between zero cost at 0.20 g/bhp-hr and COC₉₀ at the Upper Limit of 0.50 g/bhp-hr NOx. The penalty paid for engines at any compliance level between the standard and the upper limit would be equal to EPA's estimate of the highest marginal cost paid by a complying manufacturer for the same emission range.

C. Resulting Penalties

The calculation parameters listed in Table 1 are used to calculate the penalty rate. These parameters are used in the penalty rate formulas which are defined in the existing

NCP regulations (See 40 CFR 86.1113(a)(1) and (2)). Using the parameters in Table 1, and the equations in the existing NCP regulations, we have plotted penalty rates versus compliance levels in Figure 1 above. This penalty curve is for the first year of use of the NCPs (i.e., the annual adjustment factors specified in the existing NCP regulations have been set equal to one). The maximum first year penalty is equal to COC₉₀, which is \$3,775.

The Clean Air Act NCP provisions require that the penalty be set at such a level that it removes competitive disadvantage for a complying manufacturer. For the reasons described in the Technical Support Document, we believe that the NCPs being established in this rulemaking fulfills this requirement.

D. Consideration of Other Methodologies

We received comments suggesting how we should revise our estimated costs, if we continued to use the proposed methodology. Where appropriate, we incorporated these concepts into our final cost methodology. We also received comments arguing that we should change our methodology. However, as described in the Technical Support Document, we determined that the other methodologies were not appropriate.

Our primary methodology estimates the difference in lifetime compliance costs between a compliant 0.20 g/bhp-hr engine and a 0.50 g/bhp-hr engine that we believe would have the greatest competitive advantage over the compliant engine. As noted earlier, we believe that an SCR engine optimized for 0.50 g/bhp-hr would have the greatest competitive advantage over compliant engines. Two of the other approaches we considered would have involved using non-SCR engines as the baseline engines, as suggested by some commenters. However, as described below, we determined that these approaches would not sufficiently remove the potential competitive advantage of an optimized SCR engine.

In the first approach we considered using a 0.50 g/bhp-hr EGR engine (such as the engines Navistar is currently selling) as the baseline engine. This option was supported by one manufacturer during preproposal discussion, but was not supported in any comments on the NPRM. Nevertheless, we evaluated this approach to ensure that our methodology is the most appropriate one. Specifically, we estimated the hardware and operating costs associated with adding SCR to a non-SCR engine to meet the 0.20 g/bhp-hr standard. As is described in the Technical Support Document, we estimated that there would be significant hardware costs to add SCR plus significant operating costs for DEF consumption. However, these would be mostly offset by the fuel savings associated with SCR engines, plus hardware savings from down-sizing the EGR system. The combined effect would be to make the costs of going from the EGR engine to the compliant engine lower than the costs of going from the baseline SCR engine to the compliant engine. Put another way, this means that the cost savings of changing from a compliant engine to an EGR-only engine are smaller than the cost savings of changing from a compliant engine to the baseline SCR engine, indicating that an EGR engine at 0.50 g/bhp-hr would have a smaller competitive advantage than the baseline engine we used to develop the final NCPs. Moreover, this means that NCPs based on this approach would not remove the competitive disadvantage to complying manufacturers, where manufacturers of optimized SCR engines could pay the lower NCP and still have a competitive advantage over compliant engines.

In the second approach, we considered setting an upper limit at 1.2 g/bhp-hr and including the full cost of SCR as the compliance cost. As was true for the previous approach, we estimated that most of the hardware and DEF costs would be offset by the fuel savings, making the NCP at 0.50 g/bhp-hr lower than our estimate of the competitive advantage for SCR engines optimized for 0.50 g/bhp-hr. This means that setting the upper limit at 1.2 and calculating costs in this way would not remove the competitive disadvantage for complying manufacturers compared to a manufacturer who optimized its SCR engine for 0.50 g/bhp-hr NOx. Note that while we evaluated this approach with respect to costs and competitive disadvantage, we think that there are other reasons why it would not be appropriate to set the upper limit at 1.2 g/bhp-hr. In particular, the upper limit may not be set at a level that is higher than the level that EPA determines is practicable, which would be no higher than 0.50 g/bhp-hr.

Finally, we considered other scenarios in which the baseline engine would have been an SCR engine that was fundamentally redesigned to have NOx emissions at 0.50 g/bhp-hr (rather than reoptimizing an existing design). For example, some manufacturers have suggested that it would be possible to redesign engines to meet 0.50 g/bhp-hr without cooled EGR. This could result in significant savings for hardware and warranty costs. We determined that ,while it may well be technologically possible to redesign current SCR engines to meet 0.50 g/bhp-hr NOx with significantly lower hardware costs, there is no business scenario in which such savings would justify paying an NCP. Fundamentally redesigning an engine would take a minimum of two years and involve substantial capital costs. So a manufacturer that began redesigning its engines today

could not expect to have the new engine ready for production before model year 2015.

At that point, the annual adjustments to the NCPs would have increased the penalty substantially. Moreover, using NCPs in model year 2015 and later would result in a rapidly increasing penalty due to the annual adjustment factors, so a manufacturer would need to recover all of its investments within one or two model years. However, this would require the manufacturer to raise its prices so much that it would make its engines uncompetitive in the marketplace.

VI. Economic Impact

Because the use of NCPs is optional, manufacturers have the flexibility and will likely choose whether or not to use NCPs based on their ability to comply with emissions standards. If no manufacturer elects to use NCPs, these manufacturers and the users of their products will not incur any additional costs related to NCPs. NCPs remedy the potential problem of having a manufacturer forced out of the marketplace due to that manufacturer's inability to conform to new, strict emission standards in a timely manner. Without NCPs, a manufacturer which has difficulty certifying HDEs in conformance with emission standards or whose engines fail a Selective Enforcement Audit (SEA) has only two alternatives: fix the nonconforming engines, perhaps at a prohibitive cost, or prevent their introduction into commerce. The availability of NCPs provides manufacturers with a third alternative: continue production and introduce into commerce upon payment of a penalty an engine that exceeds the standard until an emission conformance technique is developed. Therefore, NCPs represent a regulatory mechanism that allows affected manufacturers to have increased flexibility. A decision to use NCPs may be a manufacturer's only way to continue to introduce its products into commerce.

VII. Environmental Impact

When evaluating the environmental impact of this rule, one must keep in mind that, under the Act, NCPs are a consequence of enacting new, more stringent emissions requirements for heavy duty engines. Emission standards are set at a level that most, but not necessarily all, manufacturers can achieve by the model year in which the standard becomes effective. Following International Harvester v. Ruckelshaus, 478 F. 2d 615

(D.C. Cir. 1973), Congress realized the dilemma that technology-forcing standards could potentially cause, and allowed manufacturers of heavy-duty engines to certify nonconforming vehicles/engines upon the payment of an NCP, under certain terms and conditions. This mechanism was intended to allow manufacturer(s) who cannot meet technology-forcing standards immediately to continue to manufacture nonconforming engines while they tackle the technological problems associated with meeting new emission standard(s). Thus, as part of the statutory structure to force technological improvements without driving manufacturers or individual engine models out of the market, NCPs provide a flexibility that fosters long-term emissions improvement through the setting of lower emission standards at an earlier date than could otherwise be feasible. Because NCPs are designed to increase with time, manufacturers using NCPs are likely to reduce emission levels to meet the standard as quickly as possible, which minimizes the environmental impact.

As is always the case with NCPs, the potential exists for there to be more extensive use of NCPs beyond what is projected at this time, where we project use by one manufacturer for a limited number of model years. For example, depending upon the penalty rate and other factors, some otherwise fully compliant manufacturers could elect to pay the NCP in order to reconfigure their 0.20 g/bhp-hr NOx compliant engines to emit up to 0.50 g/bhp-hr so that they can re-optimize engine hardware and vehicle operating costs. This potential action is not without R&D and other financial costs to the manufacturer and thus is not a decision which would be taken lightly. Furthermore, we believe that any such impacts would be short-term and self-limiting in nature because the NCP annual adjustment factor, established via prior NCP rules, increases the levels of the

penalties over time and based on the extent of the use of NCPs by all manufacturers. In other words the NCP program is structured such that the incentives to produce engines that meet the standard increase year-by-year and increase upon NCP use. The practical impact of this adjustment factor is that the NCPs will rapidly become an undesirable option for all manufacturers that may elect to use them. However, while we expect their use to be limited, we have no way of predicting at this time exactly how many engines will make use of the NCPs. Navistar has indicated that it will use NCPs until sometime in 2013, when it begins introducing vehicles with SCR technology that meet the 0.20 g/hp-hr standard. Because of these uncertainties we are unable to accurately quantify the potential impact the NCPs might have on emission inventories, although, as stated above, any impacts are expected to be short-term and self-limiting in nature.

VIII. Emission Standards for Which We are Not Establishing NCPs in this Final Rule

This section identifies the emission standards for which we are not establishing NCPs in this Final Rule.

A. Medium Heavy Duty Diesel NOx Standards

EPA proposed to find that the criteria for providing NCPs had been met for medium heavy duty diesel engines, and we proposed NCPs for these engines. However, EPA is not taking final action with regard to NCPs for these engines at this time because EPA has not completed its review of the comments and the technical data regarding establishing NCPs for these engines. A full discussion of compliance costs for medium heavy-duty engines is contained in Appendix C of the TSD for this rule. Parties may provide comments regarding these estimates by submitting comments to the docket for

this rule.

B. Light Heavy-Duty Diesel NOx Standards

EPA believes that the first two NCP criteria have been met for the 2010 NOx standard for light heavy-duty diesel engines. However, we have not determined that there is likely to be a technological laggard. We are unaware of any manufacturer that will be unable to either achieve 0.20 g/bhp-hr for the 2012 and 2013 model year or will not have sufficient NOx emission credits to continue certifying light heavy-duty engines for the foreseeable future.

C. Heavy-Duty Gasoline Engine Standards

In a final rule published on January 18, 2001 (66 FR 5001), EPA established more stringent emission standards for all heavy-duty gasoline (or “Otto-cycle”) vehicles and engines. These standards took two forms: a chassis-based set of standards for complete vehicles under 14,000 pounds GVWR (the chassis-based program), and an engine-based set of standards for all other Otto-cycle heavy-duty engines (the engine-based program). Each of the two programs has an associated averaging, banking, and trading (ABT) program. The new standards generally took effect starting with the 2008 model year, and since all manufacturers are in compliance with them, the criteria for establishing NCPs has not been met and we are not establishing NCPs for gasoline engines or vehicles.

D. Heavy-duty Diesel Engine NMHC, CO, and PM Standards

EPA adopted new NMHC and PM for model year 2007 and later heavy-duty engines in the same rule that set the 2010 NOx emission standard (66 FR 5001, January

18, 2001). The CO standard was not changed. We are not establishing NCPs for any of these other standards because all manufacturers are already fully compliant with them.

E. Heavy-duty CO₂ Standards

In a final rule published on September 15, 2011 (76 FR 57106), EPA established new CO₂ emission standards for all heavy-duty vehicles and engines. We are not considering NCPs for any of these standards at this time because we currently do not have a basis to conclude that a technological laggard is likely to develop.

As proposed, we are adding a new regulatory provision related to these CO₂ emission standards. The provision prohibits generating emission credits for CO₂ or any other pollutant from engines paying NCPs for NOx. Given the general tradeoff between CO₂ and NOx emissions, we were concerned that a manufacturer capable of meeting the 0.20 g/bhp-hr NOx emission standard could choose to pay an NCP in order to generate CO₂ credits by recalibrating its engines for higher NOx emissions and lower CO₂. There are two reasons this would be inappropriate. It would not be consistent with either the purpose of the CO₂ credit program (to provide an incentive for manufacturers to take technological and other efforts to over comply with the CO₂ standard) and would not be consistent with the purpose of the NCP program (to provide relief to manufacturers that fail to achieve the standard on time for technological reasons, not for other reasons such as the economic benefit of generating CO₂ credits by voluntarily increasing emissions of NOx).

IX. Statutory and Executive Order Reviews

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review

Under Executive Order 12866 (58 FR 51735, October 4, 1993), this action is a "significant regulatory action" because it raises novel legal and policy issues.

Accordingly, EPA submitted this action to the Office of Management and Budget (OMB) for review under Executive Orders 12866 and 13563 (76 FR 3821, January 21, 2011) and any changes made in response to OMB recommendations have been documented in the docket for this action.

B. Paperwork Reduction Act

This action does not impose any new information collection burden. It only updates the penalty amounts to correspond to the current emission standards. However, the Office of Management and Budget (OMB) has previously approved the information collection requirements contained in the existing regulations 40 CFR part 86, subpart L under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. and has assigned OMB control number 2060-0132. The OMB control numbers for EPA's regulations in 40 CFR are listed in 40 CFR part 9.

C. Regulatory Flexibility Act

(1) Overview

The Regulatory Flexibility Act generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute, unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of these rules on small entities, small entity is defined as: (1) a small business as defined by SBA regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

(2) Summary of Potentially Affected Small Entities

After considering the economic impacts of this rule on small entities, I certify that this action will not have a significant impact on a substantial number of small entities.

When these emission standards were established, the final rulemaking (66 FR 5001, January 18, 2001) noted that we were not aware of “any manufacturers of heavy-duty engines that meet SBA’s definition of a small business.” Based on an updated assessment, EPA has identified a total of about 14 manufacturers that produce diesel cycle heavy-duty motor vehicle engines. Of these, none of these are small businesses that

are producing engines with NOx emissions above 0.20 g/bhp-hr. Based on this, we are certifying that this rule will not have a significant economic impact on a substantial number of small entities.

(3) Conclusions

I therefore certify that this Final Rule will not have a significant economic impact on a substantial number of small entities.

D. Unfunded Mandates Reform Act

This rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for State, local, and tribal governments, in the aggregate, or the private sector in any one year. The agency has determined that this action does not contain a Federal mandate that may result in expenditures of \$100 million or more for the private sector in any one year. Because the use of NCPs is optional, manufacturers have the flexibility and will likely choose whether or not to use NCPs based on their ability to comply with emissions standards. The availability of NCPs provides manufacturers with a third alternative: to continue production and introduce into commerce upon payment of a penalty an engine that exceeds the standard until an emission conformance technique is developed. Therefore, NCPs represent a regulatory mechanism that allows affected manufacturers to have increased flexibility. Thus, this action is not subject to the requirements of sections 202 or 205 of the UMRA. This action is also not subject to the requirements of section 203 of the UMRA because it contains no regulatory requirements that might significantly or uniquely affect small governments.

E. Executive Order 13132 (Federalism)

Executive Order 13132, entitled “Federalism” (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” is defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.”

This action does not have federalism implications. It will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. These rules will apply to manufacturers of on-highway engines and not to state or local governments. Thus, Executive Order 13132 does not apply to this action.

F. Executive Order 13175 (Consultation and Coordination with Indian Tribal Governments)

This Final Rule does not have tribal implications, as specified in Executive Order 13175 (65 FR 67249, November 9, 2000). This rule will be implemented at the Federal level and impose compliance costs only on engine manufacturers who elect to use the NCP regulatory flexibility to comply with emissions standards. Tribal governments

would be affected only to the extent they purchase and use engines and vehicles to which an NCP has been applied. Thus, Executive Order 13175 does not apply to this rule.

G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks

Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks (62 FR 19885, April 23, 1997) applies to any rule that: (1) is determined to be "economically significant" as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the agency.

EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5-501 of the Order has the potential to influence the regulation. This rule is not subject to Executive Order 13045 because it does not establish an environmental standard intended to mitigate health or safety risks.

H. Executive Order 13211 (Energy Effects)

This action is not a “significant energy action” as defined in Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not likely to have a significant

adverse effect on the supply, distribution, or use of energy. We have concluded that any energy impacts of this rule will be small because:

- The NCPs will be used for a limited duration.
- This rule will affect a small number of heavy duty vehicles relative to the total in-use fleet.
- The per-vehicle impact of this rule will be small.

I. National Technology Transfer Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (“NTTAA”), Public Law No. 104-113, 12(d) (15 U.S.C. 272 note) directs the agencies to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (*e.g.*, materials, specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs EPA to provide Congress, through OMB, explanations when the EPA decides not to use available and applicable voluntary consensus standards.

This rule does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards.

J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 (59 FR 7629, February 16, 1994) establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this action will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations. The overall environmental impacts of this action are expected to be small and of limited duration. Moreover, there is no reason to believe that trucks using NCP engines will be more likely to operate near any minority or low-income populations than other trucks.

K. Congressional Review Act

The Congressional Review Act, 5 U.S.C. §801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing this rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the

Comptroller General of the United States prior to publication of the rule in the Federal Register. A

Nonconformance Penalties for On-highway Heavy-Duty Diesel Engines

Major rule cannot take effect until 60 days after it is published in the Federal Register. This action is not a “major rule” as defined by 5 U.S.C. §804(2). This rule will be effective [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER].

X. Statutory Provisions and Legal Authority

Statutory authority for the vehicle controls in these rules is found in CAA sections 202 and 206(g), of the CAA, 42 U.S.C. 7521 and 7525(g).

List of Subjects in 40 CFR Part 86

Administrative practice and procedure, Confidential business information, Motor vehicle pollution, Reporting and recordkeeping requirements.

Date: August 30, 2012

Lisa P. Jackson,

Administrator

For the reasons set forth in the preamble, the Environmental Protection Agency is amending 40 CFR chapter I of the Code of Federal Regulations as follows:

PART 86—CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES

1. The authority citation for part 86 continues to read as follows:

Authority: 42 U.S.C. 7401-7671q.

Subpart L—[Amended]

2. Section 86.1103-87 is revised to read as follows:

§ 86.1103-87 Criteria for availability of nonconformance penalties.

(a) EPA shall establish for each subclass of heavy-duty engines and heavy-duty vehicles (other than motorcycles), an NCP for a motor vehicle pollutant, when any new or revised emission standard is more stringent than the previous standard for the pollutant, or when an existing standard for that pollutant becomes more difficult to achieve because of a new or revised standard, provided that EPA finds:

- (1) That for such subclass of engines or vehicles, substantial work is required to meet the standard for which the NCP is offered, and
- (2) That there is likely to be a technological laggard.

(b) Substantial work, as used in paragraph (a)(1) of this section, means the application of

technology that was not generally used in an engine or vehicle class or subclass to meet standards prior to the implementation of the new or revised standard, or the significant modification of existing technology or design parameters, needed to bring the vehicle or engine into compliance with either the more stringent new or revised standard or an existing standard which becomes more difficult to achieve because of a new or revised standard. Substantial work is determined by the total amount of work required to meet the standard for which the NCP is offered, compared to the previous standard, irrespective of when EPA establishes the NCP.

3. Section 86.1104-91 is revised to read as follows:

§ 86.1104-91 Determination of upper limits.

EPA shall set a separate upper limit for each phase of NCPs and for each service class.

- (a) Except as provided in paragraphs (b), (c), and (d) of this section, the upper limit shall be set as follows:
- (1) The upper limit applicable to a pollutant emission standard for a subclass of heavy-duty engines or heavy-duty vehicles for which an NCP is established in accordance with §86.1103–87, shall be the previous pollutant emission standard for that subclass.
- (2) If a manufacturer participates in any of the emissions averaging, trading, or banking programs, and carries over certification of an engine family from the prior model year, the upper limit for that engine family shall be the family emission limit of the prior model year, unless the family emission limit is less than the upper limit determined in paragraph

- (a) of this section.
- (b) If no previous standard existed for the pollutant under paragraph (a) of this section, the upper limit will be developed by EPA during rulemaking.
- (c) EPA may set the upper limit during rulemaking at a level below the level specified in paragraph (a) of this section if we determine that a lower level is achievable by all engines or vehicles in that subclass.
- (d) EPA may set the upper limit at a level above the level specified in paragraph (a) of this section if we determine that the such level will not be achievable by all engines or vehicles in that subclass.

4. Section 86.1105-87 is amended by revising paragraph (e) and adding paragraph (j) to read as follows:

§ 86.1105-87 Emission standards for which nonconformance penalties are available.

* * * * *

- (e) The values of COC₅₀, COC₉₀, and MC₅₀ in paragraphs (a) and (b) of this section are expressed in December 1984 dollars. The values of COC₅₀, COC₉₀, and MC₅₀ in paragraphs (c) and (d) of this section are expressed in December 1989 dollars. The values of COC₅₀, COC₉₀, and MC₅₀ in paragraph (f) of this section are expressed in December 1991 dollars. The values of COC₅₀, COC₉₀, and MC₅₀ in paragraphs (g) and (h) of this section are expressed in December 1994 dollars. The values of COC₅₀, COC₉₀, and MC₅₀ in paragraph (i) of this section are expressed in December 2001 dollars. The values of

COC₅₀, COC₉₀, and MC₅₀ in paragraph (j) of this section are expressed in December 2011 dollars. These values shall be adjusted for inflation to dollars as of January of the calendar year preceding the model year in which the NCP is first available by using the change in the overall Consumer Price Index, and rounded to the nearest whole dollar in accordance with ASTM E29–67 (reapproved 1980), Standard Recommended Practice for Indicating Which Places of Figures are to be Considered Significant in Specified Limiting Values. This method was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. This document is available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428–2959, and is also available for inspection as part of Docket A–91–06, located at the U.S. EPA, Air and Radiation Docket and Information Center, 1301 Constitution Ave., NW., Room 3334, EPA West Building, Washington, DC 20004, (202) 202–1744 or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202–741–6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>. This incorporation by reference was approved by the Director of the Federal Register on January 13, 1992. These materials are incorporated as they exist on the date of the approval and a notice of any change in these materials will be published in the Federal Register.

* * * * *

(j) Effective in the 2012 and later model years, NCPs will be available for the following emission standard:

(1) Diesel heavy-duty engine oxides of nitrogen standard of 0.20 grams per brake horsepower-hour in §86.007–11(a)(1)(i).

- (i) [Reserved].
- (ii) For heavy heavy-duty diesel engines:
 - (A) The following values shall be used to calculate an NCP in accordance with §86.1113–87(a):
 - (1) COC₅₀: \$3,219.
 - (2) COC₉₀: \$3,775.
 - (3) MC₅₀: \$10,729 per gram per brake horsepower-hour NOx.
 - (4) F: 1.173.
 - (5) UL: 0.50 grams per brake horsepower-hour NOx.
 - (B) The following factor shall be used to calculate the engineering and development component of the NCP for the standard set forth in §86.007–11(a)(1)(i) in accordance with §86.1113–87(h): 0.005.

- (2) Manufacturers may not generate emission credits for any pollutant from engines for which the manufacturer pays an NCP for the NOx standard identified in paragraph (j)(1) of this section.
- (3) The penalty shall be adjusted annually as specified in §86.1113-87 with 2012 as the first year. Note that this means AAF₂₀₁₂ is equal to 1.

5. Section 86.1113-87 is amended by revising paragraph (g)(1) to read as follows:

§ 86.1113-87 Calculation and payment of penalty.

* * * *

(g)(1) Except as provided in paragraph (g)(2) of this section, the nonconformance penalty

or penalties assessed under this subpart must be paid as follows:

(i) By the quarterly due dates, i.e., within 30 days of the end of each calendar quarter

(March 31, June 30, September 30 and December 31), or according to such other

payment schedule as the Administrator may approve pursuant to a manufacturer's

request, for all nonconforming engines or vehicles produced by a manufacturer in

accordance with paragraph (b) of this section and distributed into commerce for that

quarter.

(ii) The penalty shall be payable to U.S. Environmental Protection Agency, NCP Fund,

Motor Vehicle and Engine Compliance Program, P.O. Box 979032

St. Louis, MO 63197-9000. Note on the check and supporting information that this is an

NCP payment.

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[FR Doc. 2012-21967 Filed 09/04/2012 at 8:45 am; Publication Date: 09/05/2012]