manufacturer may include equipment produced by other manufacturers under license to them for which they had primary design responsibility (see section 1039.625(a) of the regulations). This should cover the type of situation described by the commenters while preventing an import-only entity from claiming it is an equipment manufacturer and thereby gaining access to the allowances.

a. Percent-of-Production Allowance

Under the percent-of-production allowance adopted today, each equipment manufacturer will be allowed to install engines not certified to the Tier 4 emission standards in a limited percentage of machines produced for the U.S. market. Equipment manufacturers will need to provide written assurance to the engine manufacturer that such engines are being procured for the purpose of the transition provisions for equipment manufacturers. These engines will instead have to be certified to the standards that would apply in the absence of the Tier 4 standards (see Table III.B–1 for the applicable standards). As proposed, this percentage will apply separately to each of the Tier 4 power categories (engines below 25 horsepower, engines between 25 and 75 horsepower, engines between 75 and 175 horsepower, engines between 175 and 750 horsepower, and engines above 750 horsepower) and is expressed as a cumulative percentage of 80 percent over the seven years beginning when the Tier 4 standards apply in a category (see Table III.B–1 for the applicable seven-year periods). No exemptions will be allowed after the seventh year. For example, an equipment manufacturer could install engines certified to the Tier 3 standards in 40 percent of its entire 2011 production of nonroad equipment that use engines rated between 175 and 750 horsepower, 30 percent of its entire 2012 production in this horsepower category, and 10 percent of its entire 2013 production in this horsepower category. (During the transitional period for the Tier 4 standards, the fifty percent of engines that are allowed to certify to the previous tier NO_X standard but meet the Tier 4 PM standard are considered Tier 4-compliant engines for the purpose of the equipment manufacturer transition provisions.) If the same manufacturer produces equipment using engines rated above 750 horsepower, a separate cumulative percentage allowance of 80 percent will apply to those machines during the seven years beginning in 2011 or 2015. This percent-of-production allowance is almost identical to the percent-of-production allowance adopted in the October 1998 final rule (63 FR 56967, October 23, 2003), the difference being, as explained earlier, that there are fewer power categories (and consequent increased flexibility in spreading the flexibility among engine families) associated with the Tier 4 standards.

The 80 percent exemption allowance, were it to be used to its maximum extent by all equipment manufacturers, will bring about the introduction of cleaner engines several months later than would have occurred if the new standards were to be implemented on their effective dates. However, the equipment manufacturer flexibility program has been integrated with the standard-setting process from the initial development of this rule, and as such we believe it is a key factor in assuring that there is sufficient lead time to initiate the Tier 4 standards according to the final implementation schedule.[65]

As proposed, machines that use engines built before the effective date of the Tier 4 standards do not have to be included in an equipment manufacturer's percent of production calculations under this allowance. Machines that use engines certified to the previous tier of standards under our Small Business provisions (as described in section III.C of this preamble) do not have to be included in an equipment manufacturer's percent of production calculations under this allowance. All engines certified to the Tier 4 standards, including those engines that produce emissions at higher levels than the standards, but for which an engine manufacturer uses ABT credits to demonstrate compliance, will count as Tier 4 complying engines and do not have to be included in an equipment manufacturer's percent of production calculations. Engines that meet the Tier 4 PM standards but are allowed to meet the Tier 3 NMHC+NO_X standards during the phase-in period also count as Tier 4 complying engines and do not have to be included in an equipment manufacturer's percent of production calculations.

The choice of a cumulative percent allowance of 80 percent is based on our best estimate of the degree of reasonable lead time needed by equipment manufacturers. We believe the 80 percent allowance responds to the need for flexibility identified by equipment manufacturers, while ensuring a significant level of emission reductions in the early years of the program. (As noted in the following section III.B.2.b, we are adopting a technical hardship provision that allows an equipment manufacturer to request additional relief under the percent of production allowance under certain conditions and with EPA approval.)

b. Technical Hardship Flexibility

Ingersoll-Rand commented that the 80% percent of production allowance level is not sufficient for Tier 4 given the stringency of the standard and the difficulty engine manufacturers will have complying with the standards. In further discussions with Ingersoll-Rand on this issue, they suggested that a percent of production allowance level of 150% for totally non-integrated equipment manufacturers (*i.e.*, equipment manufacturers producing no diesel engines) was appropriate for Tier 4 power categories above 25 horsepower. A fully integrated manufacturer would still receive the 80% level and partially-integrated companies would receive somewhere between 80% and 150% depending on the share of self-produced engines in each specific power category. The basis for this comment is their belief that non-integrated manufacturers are at a disadvantage to integrated manufacturers (manufacturers making both the engine and equipment) when it comes to planning for new Tier 4 engine designs.

Although we do not accept the premise that equipment manufacturer lead time must be drastically expanded across-the-board for the Tier 4 program, we do agree, as explained earlier, that there may be situations where additional lead time, in the form of increased equipment manufacturer transition flexibilities, can be justified. Therefore, we have added an additional flexibility (which has no direct analogue in the Tier 2/3 rule) to this rule in order to provide additional needed lead time in appropriate, individualized circumstances based on a showing of extreme technical or engineering hardship. Ingersoll-Rand has agreed, by letter to EPA, that this provision satisfies all of its concerns regarding

[65] As explained at proposal, for emissions modeling purposes, we have assumed that manufacturers take full advantage of the allowances under the existing transition program for equipment manufacturers (adopted in the October 1998 rule; see 63 FR 56967 (October 23, 2003) in establishing the baseline emissions inventory. In modeling the impact of the Tier 4 standards, because the standards will not take effect for many years and it is not possible to accurately forecast use of the transition program for equipment manufacturers, so to assess costs in a conservative manner, we have assumed that all engines will meet the Tier 4 standards in the timeframe required by the standards without use of the Tier 4 transition provisions. As discussed in section VI.C, this is consistent with our cost analysis, which assumes no use of the transition program for equipment manufacturers.

adequacy of lead time for meeting Tier 4 standards.

This additional flexibility would be available for the three Tier 4 power categories between 25 and 750 horsepower. As noted earlier, Ingersoll-Rand did not believe additional flexibility was needed for engines below 25 horsepower. We agree because the Tier 4 standards for engines below 25 horsepower are not based on the use of advanced aftertreatment. We also are not including this new provision for engines above 750 horsepower because nearly all of the equipment manufacturers utilizing engines above 750 horsepower make small volumes of equipment. The small-volume allowance (described in the following section) allows a manufacturer to exempt a specific number of engines over a seven-year period, which in most cases will be greater than the increased percentage potentially available under this new provision.

This new provision, found in new § 1039.625(m), is a case-by-case exemption granted by EPA to an equipment manufacturer. The equipment manufacturer would have the burden of demonstrating existence of extreme technical or engineering hardship conditions that are outside its control. It must also demonstrate that it has exercised reasonable due diligence to avoid the situation. EPA would treat each request for technical hardship separately, with no guarantee that it would grant the exemption. If EPA grants the exemption, the equipment manufacturer could receive up to an additional 70 percent under the percent of production allowance for each of the three power categories noted above (meaning that there is a potential total 150 percent under the percent of production allowance available, the initial 80 percent available without application, and an additional potential increment of up to 70 percent available on a case-by-case basis).

The exemption could only be granted upon written application to EPA setting forth essentially why the normally successful elements of engine maker/equipment manufacturer design cycle have not provided adequate lead time for a particular equipment model. The application would therefore have to address, with documentation: The engineering or technical problems that have proved unsolvable within the lead time provided, the normal design cycle between the engine maker and equipment manufacturer and why that cycle has not worked in this instance, all information (such as written specifications, performance data, prototype engines) the equipment manufacturer has received from the engine supplier, and a comparison of the design process for the equipment model for which the exemption is requested with the design process for other models for which no exemption is needed. The equipment manufacturer also would have to make and describe all efforts to find other compliant engines for the model. EPA will then evaluate and determine whether or not to grant each such request, and what additional increment under the percent of production allowance (above the 80 percent normally allowed) is justified (not to exceed an additional 70 percent as noted above). As part of our evaluation of requests based on technical hardship, we may contact the engine supplier(s) listed by the equipment manufacturer to check on the accuracy of the engine-related information supplied by the equipment manufacturer. This extension of lead time is premised on the existence of extreme technical or engineering problems, in contrast to the economic hardship provision described in section III.B.2.f below, where consideration of economic impact is critical.

EPA would not grant an application for technical hardship exemption unless the equipment manufacturer demonstrates that the full 80 percent allowed under the percent of production allowance is reasonably expected to be used up in the first two years of the seven-year flexibility period. The reason is obvious. If that allowance would not be fully utilized, then no further extension of lead time can be justified. Furthermore, any technical hardship allowance would have to be used up within two years after the Tier 4 percent of production allowances start for any power category. This is because, although we believe that circumstances of extreme technical or engineering hardship may arise, we cannot see that these circumstances could not be solved within the first two years of the transition. Indeed, Ingersoll-Rand itself clearly indicated that this is a temporary burden which exists during initial model transition and indicated that only 18 months (rather than two years) could be needed from receipt of the certified engine.

This flexibility will be available to all equipment manufacturers, but may only be requested for equipment in which the equipment manufacturer is different than the engine manufacturer. We believe that integrated manufacturers who produce both the equipment and the engine used in the piece of equipment could have an advantage in the equipment redesign process (compared to an equipment manufacturer, whether integrated or not, that uses engines from a different manufacturer) that makes additional relief under the percent of production allowance unnecessary. In addition, integrated equipment manufacturers have other programs available to them (that non-integrated manufacturers do not have) such as the engine averaging, banking and trading program, which can provide lead time flexibility during the transition years. Most basically, integrated manufacturers should be able to design concurrently in all circumstances, so that extreme technical or engineering hardships should not arise.

c. Small-Volume Allowance

The percent-of-production approach described above may provide little benefit to businesses focused on a small number of equipment models, and hence there could be situations where there is insufficient lead time for such models. Therefore, with today's action, we are adopting a small-volume allowance that will allow any equipment manufacturer to exceed the percent-of-production allowances described above during the same seven-year period, provided the manufacturer limits the number of exempted engines to 700 total over the seven years, and to 200 in any one year. The limit of 700 exempted engines (and no more than 200 engines per year) applies separately to each of the Tier 4 power categories (engines below 25 horsepower, engines between 25 and 75 horsepower, engines between 75 and 175 horsepower, engines between 175 and 750 horsepower, and engines above 750 horsepower). In addition, manufacturers making use of this provision must limit exempted engines to a single engine family in each Tier 4 power category.

We are also adopting an alternative small-volume allowance, which equipment manufacturers have the option of utilizing. In discussions regarding the current small-volume allowance, some manufacturers expressed the desire to be able to exempt engines from more than one engine family, but still fall under the number of exempted engine limit. For that reason, we solicited comment on a small-volume allowance program that would allow manufacturers to exempt engines in more than one family, but have lower numerical limits. Under this alternative, manufacturers using the small-volume allowance could exempt 525 machines over seven years (with a maximum of 150 in any given year) for each of the three power categories below 175 horsepower, and 350 machines over seven years (with a maximum of 100 in

any given year) for the two power categories above 175 horsepower. Concurrent with the revised caps of 525 or 350, depending on power category, manufacturers could exempt engines from more than one engine family under the small-volume allowance program. Based on sales information for small businesses, we estimated that the alternative small-volume allowance program to include lower numbers of eligible engines and allow manufacturers to exempt more than one engine family would keep the total number of engines eligible for the allowance at roughly the same overall level as the 700-unit program.[66] We also requested comment on allowing equipment manufacturers to choose between the two small-volume allowance programs described above (68 FR 28474–28475, May 23, 2003).

Both engine and equipment manufacturers supported dropping the one engine family restriction from the 700 unit small-volume allowance. In addition, they commented that if the one engine family restriction was not dropped from the 700 unit option, they supported the option of allowing equipment manufacturers to choose between the two small-volume allowance options. With today's action, we are revising the proposed small-volume allowance to allow equipment manufacturers to choose between the 700 unit over seven years option, with exempted engines limited to one engine family, or the proposed alternative which would allow equipment manufacturers to exempt fewer engines over seven years (525 or 350 units, depending on the power category), but with no restriction on the number of engine families that could be included in the exempted engine count. Based on our analysis of small businesses noted above, we expect the number of engines that could be exempted under either option is roughly the same. Giving equipment manufacturers the ability to choose between the two options should not significantly impact the number of engines likely to be exempted under the small-volume allowance. We have not chosen to drop the one engine family restriction from the 700-unit small-volume allowance because it would result in a significant increase in the number of engines eligible to be exempted to levels which we believe are not needed to provide adequate lead time for the Tier 4 program.[67]

As with the percent-of-production allowance, machines that use engines built before the effective date of the Tier 4 standards do not have to be included in an equipment manufacturer's count of engines under the small-volume allowance. Similarly, machines that use engines certified to the previous tier of standards under our Small Business provisions (as described in section III.C of today's action) do not have to be included in an equipment manufacturer's count of engines under the small-volume allowance. All engines certified to the Tier 4 standards, including those that produce emissions at higher levels than the standards but for which an engine manufacturer uses ABT credits to demonstrate compliance, will be considered to be Tier 4 complying engines and do not have to be included in an equipment manufacturer's count of engines under the small-volume allowance. Engines that meet the Tier 4 PM standards but are allowed to meet the Tier 3 $NMHC+NO_X$ standards during the phase-in period (*i.e.*, phase-out engines) will also be considered as Tier 4 complying engines and do not have to be included in an equipment manufacturer's count of engines under the small-volume allowance. All engines used under the small-volume allowance must certify to the standards that would be in effect in the absence of the Tier 4 standards (see Table III.B–1 for the applicable standards). As noted earlier, equipment manufacturers will need to provide written assurance to the engine manufacturer when it purchases engines under the transition provisions for equipment manufacturers.

The Engine Manufacturers Association commented that the proposed regulations for the small-volume allowance established a limit on the total number of engines an equipment manufacturer could use that did not meet the Tier 4 standards and should be revised to set a limit based on U.S.-directed production (consistent with the proposed regulatory language for the percent-of-production allowance). EPA agrees that the limit under the small-volume allowance should apply to U.S.-directed production only—as the commenter surmised, this is what EPA intended—and has revised the final regulations for the small-volume allowance accordingly.

We are also finalizing a technical hardship provision for small business equipment manufacturers using 25–50 horsepower engines, as discussed in III.C.2.b.ii.

d. Early Use of Tier 4 Flexibilities in the Tier 2/3 Timeframe

As proposed, we are also adopting provisions that allow equipment manufacturers to start using a limited number of the new Tier 4 percent of production allowances or Tier 4 small-volume allowances once the seven-year period for the existing Tier 2/Tier 3 program expires (and so continue using engines meeting Tier 1 or Tier 2 standards). In this way, a manufacturer can potentially continue exempting the most difficult applications once the seven-year period of the current Tier 2/3 flexibility provisions is finished. (Under the existing transition program for equipment manufacturers, any unused Tier 2/3 allowances expire after the seven-year period.) However, opting to start using Tier 4 allowances once the seven-year period from the current Tier 2/Tier 3 program expires will reduce the number of exemptions available from the Tier 4 standards under either the percent of production allowance or the small-volume allowance.

With today's action, equipment manufacturers may use up to a total of 10 percent of their Tier 4 percent of production allowances or up to 100 of their Tier 4 small-volume allowances prior to the effective date of the Tier 4 standards. (The early use of Tier 4 allowances will be allowed in each Tier 4 power category.) This amount of equipment utilizing the early Tier 4 allowances will be subtracted from either the Tier 4 allowance of 80 percent under the percent of production allowance or the applicable limit under the small-volume allowance for the appropriate power category, resulting in fewer allowances once the Tier 4 standards take effect. For example, if an equipment manufacturer uses the maximum amount of early Tier 4 percent of production allowances of 10 percent, then the manufacturer will have a cumulative total of 70 percent remaining for that power category when the Tier 4 standards take effect (*i.e.*, 80 percent production allowance minus 10 percent).

The California Air Resources Board commented that we should discount the early use of Tier 4 flexibilities to discourage abuse of the provisions, by requiring equipment manufacturers to give up more than one flexibility after Tier 4 begins for every flexibility used prior to Tier 4. California did not specifically recommend what the discount level should be. We are not adopting a discount for early use of the Tier 4 flexibilities. The intent of

[66] ''Analysis of Small Volume Equipment Manufacturer Flexibilities,'' memo from Phil Carlson (EPA) to Docket A–2001–28.

[67] Memorandum, Phil Carlson to Docket A–2001–28, ''Analysis of Equipment Manufacturer Flexibilities,'' April 15, 2003. Docket A–2001–28, document no. II–B–24.

allowing manufacturers to use the Tier 4 flexibilities early was to allow them to carry over the few remaining equipment models that might not have been redesigned at the end of the seven-year Tier 2/Tier 3 flexibility period until Tier 4 begins, and not requiring a possible double redesign in a short period of time. Because we have placed a relatively low cap (10% under the percent of production allowance or 100 units under the small volume allowance) on the amount an equipment manufacturer could use early from Tier 4, we do not believe that manufacturers will be able to abuse the program and therefore should not have to discount the number of Tier 4 flexibilities used early.

We view this provision on early use of Tier 4 allowances as providing reasonable lead time for introducing Tier 4 engines, since it should result in earlier introduction of Tier 4-compliant engines (assuming that the allowances would otherwise be fully utilized) with resulting net environmental benefit (notwithstanding longer utilization of earlier Tier engines, due to the stringency of the Tier 4 standards) and should do so at net reduction in cost by providing cost savings for the engines that have used the Tier 4 allowances early. (This is another reason we see no reason to discount the allowance.)

e. Early Tier 4 Engine Incentive Program for Equipment Manufacturers

Ingersoll-Rand commented that non-integrated equipment manufacturers who incorporate Tier 4 compliant engines into their equipment prior to the applicable date for the Tier 4 standards should be able to earn early compliance credits. These early compliance credits could allow use of the previous-tier engine (above and beyond the base percentage granted under the flexibility program) for up to 18 months after the certification date of the engine. Ingersoll-Rand also commented that such early compliance credits should be able to be traded across power categories with appropriate weightings applied.

We believe a program that provides an incentive for equipment manufacturers to use early Tier 4-compliant engines is worthwhile from both a technology development perspective and an environmental perspective. As we noted at proposal when we proposed a similar incentive program for engine makers, early use of Tier 4 compliant engines will help foster technology development by getting the Tier 4 technologies out in the market early and provide real-world experience to manufacturers and users (68 FR 28482, May 23, 2003). It will also lead to additional emission reductions above and beyond those expected under the existing Tier 2/3 standards in the years prior to Tier 4 taking effect. Moreover, equipment manufacturers (and especially non-integrated equipment manufacturers) are unlikely to buy early Tier 4 engines without some incentive to do so since these engines are likely to be more expensive than Tier 2/3 engines. For these reasons, we are adopting new provisions that will allow any equipment manufacturer to earn early compliance credits that could be used to increase the number of equipment flexibilities above and beyond the levels allowed under the percent of production allowance or small-volume allowance (and for reasons independent of those allowances: namely, an inducement to make early use of Tier 4 engines).

The program will be available to all equipment manufacturers regardless of whether they are integrated or non-integrated. While Ingersoll-Rand commented that the program should be available to non-integrated equipment manufacturers only, we believe the program should provide an incentive for all equipment manufacturers to use early Tier 4 engines (since the benefits accruing from early use of such engines exist regardless of whether the equipment manufacturer is integrated with the engine maker).

Before describing this provision further, it is desirable to put it in context by explaining its relationship to the engine manufacturer incentive program for early Tier 4 or very low emission engines (described in section III.M below), as well as to the similar incentive provisions for engine manufacturers which we proposed (68 FR 28482, May 23, 2003). We are, in essence, redirecting the proposed incentive for using early Tier 4 compliant engines to equipment manufacturers. Thus, under today's rule, an engine manufacturer could use the incentive program (as described in section III.M) only if an equipment manufacturer uses an early Tier 4 engine but (for whatever reason) declines to use the early engine flexibility allowance. In such a case, the engine manufacturer could opt to earn either ''engine offsets'' (which would allow them to make fewer engines certified to the Tier 4 standards once the Tier 4 program takes effect) or ABT credits, but not both. In the more likely case of an equipment manufacturer using early Tier 4 engines and using the incentive flexibilities itself, the engine manufacturer would be eligible to generate ABT credits from such early Tier 4 compliant engines.

The early Tier 4 engine incentive program for equipment manufacturers will apply to the four power categories above 25 horsepower where the use of advanced exhaust aftertreatment is expected under the Tier 4 standards. Because the Tier 4 standards for engines below 25 horsepower are not expected to result in the use of advanced aftertreatment technologies, we are not including such engines in the program.

In order for an engine to be considered an early Tier 4 compliant engine, it will need to be certified to the final Tier 4 standards for PM, NO_X, and NMHC (*i.e.*, the 2013 standards for engines between 25 and 75 horsepower, the 2014 standards for engines between 75 and 175 horsepower, the 2014 standards for engines between 175 and 750 horsepower, and the 2015 standards for engines above 750 horsepower) or to the final PM and NMHC standards and the alternative NO_X standards during the phase-in (as described in section II.A.2.c of today's rule for engines between 75 and 750 horsepower). In order to be an early Tier 4 compliant engine, these engines would also have to certify to the Tier 4 CO standards. Because 15 ppm sulfur diesel fuel will be available on a widespread basis in time for 2007 (due to the requirements for on-highway heavy-duty engines), we are allowing engine manufacturers to begin certifying engines to the Tier 4 standards, and therefore have engines eligible for the early Tier 4 engine incentive program, beginning with the 2007 model year.

In order to provide assurance that early Tier 4 compliant engines are placed into equipment earlier than would otherwise happen under the Tier 4 program, engine manufacturers will be required to certify and start producing such engines before September 1 of the year prior to the post-2011 Tier 4 standards taking effect or before September 1, 2010 for engines in the 175 to 750 horsepower category. Similarly, equipment manufacturers will be required to install such engines in equipment before January 1 of the year the post-2011 Tier 4 standards take effect or before January 1, 2011 for engines in the 175 to 750 horsepower category. In addition, in order to be considered an early Tier 4 compliant engine, such engines would be required to comply with all of the requirements associated with the final Tier 4 standards such as NTE requirements, transient testing (where otherwise required for certification, *i.e.* for 25–750 horsepower engines), and closed crankcase requirements. Finally, for engines certified prior to model year 2011, the engine manufacturer would be

allowed to demonstrate early compliance with the Tier 4 standards on a 15 ppm sulfur fuel (as allowed under the certification fuel requirements specified in section III.D of today's rule) provided the engine manufacturer demonstrates that the equipment in which the engines are placed will use fuel meeting this low sulfur specification and includes appropriate information on the engine label and ensures that ultimate purchasers of equipment using these engines are informed that ultra low-sulfur diesel fuel is recommended (see section 1039.104(e) of the regulations). Equipment manufacturers using such pre-2011 engines in their equipment would likewise need to take steps to ensure that fuel meeting this low sulfur specification is used in the equipment once operated in use to earn the additional flexibility allowances.

Equipment manufacturers installing engines complying with the final Tier 4 standards (as described above) would earn one flexibility allowance for each early Tier 4 compliant engine used in its equipment. Equipment manufacturers installing engines between 75 and 750 horsepower that comply with the final Tier 4 PM standard and the alternative NO_X standard (described in section II.A.2.c) would earn one-half of a flexibility allowance for each early Tier 4 compliant engine used in its equipment. Table III.B–2 presents the requirements an engine would need to meet to be considered an early Tier 4 engine for the purposes of this early Tier 4 engine incentive program.

TABLE III.B–2.—REQUIREMENTS FOR ENGINES

[Under the Early Tier 4 Engine Incentive Program]

Power category	Tier 4 standards the engines must meet	Date before which engines must be installed by the equipment manufacturer	Number of flexibility allowances earned for use of early tier 4 engines
25 ≤ hp < 75 (19 ≤ kW < 56)	Model Year 2013	January 1, 2013[a]	1–to–1
75 ≤ hp < 175 (56 ≤ kW <130)	Model Year 2014	January 1, 2012	1–to–1
	Model Year 2012[b]	January 1, 2012	0.5–to–1
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560)	Model Year 2014	January 1, 2011	1–to–1
	Model Year 2011[b]	January 1, 2011	0.5–to–1
Generator Sets >750 hp (>560 kW)	Model Year 2015	January 1, 2015	1–to–1
Other Machines >750 hp (>560 kW)	Model Year 2015	January 1, 2015	1–to–1

[a] The installation date for 50 to 75 horsepower engines purchased from manufacturers choosing to opt out of the 2008 model year Tier 4 standards and instead comply with the Tier 4 standards beginning in 2012 would be January 1, 2012.

[b] To be eligible, engines must meet the 0.01g/bhp-hr PM standard and the alternative NO_X standards in section 1039.102 (e) described in section II.A.2.c.

As described above, equipment manufacturers using early Tier 4 compliant engines can earn flexibility allowances that can be used to effectively increase the number of allowances provided under the percent of production allowance or the small volume allowance in the same power category. For example, an equipment manufacturer that uses 500 engines in the 175 to 750 horsepower category that met the model year 2011 PM standards and alternative NO_X standards would earn 250 additional flexibility allowances in that power category. That manufacturer could then exclude 250 engines from its calculations before demonstrating compliance with the 80 percent limit under the percent of production allowance (or the applicable limit under the small volume allowance if the equipment manufacturer is using that option) once Tier 4 starts in that power category.

Equipment manufacturers would be required to report certain information regarding the early Tier 4 compliant engines (such as engine family name, number of engines used prior to Tier 4 in each power category, the rated power of the engines, and the type of application the engines above 750 horsepower were used in) when they submit their first report under the Tier 4 flexibility program. For engines above 750 horsepower, equipment manufacturers also would be required to keep records of how many early Tier 4 compliant engines are used in generator sets, versus how many are used in other machinery. This is because the additional flexibility allowances earned from the use of early Tier 4 compliant engines used in generator sets could only be used for additional flexibility allowances for generator sets. Likewise, the additional flexibility allowances earned from the use of early Tier 4 compliant engines used in mobile machinery (labeled 'other machinery' in the table above) applications could only be used for additional flexibility allowances for other non-generator set applications.

Under the early Tier 4 engine incentive program, we will allow equipment manufacturers to ''trade'' the additional flexibilities earned in the two power categories between 75 and 750 horsepower, with the power rating of the engines factored into the ''trade'' to ensure equivalent emissions for the engines generating the early allowances and the engines using the allowances. For example, an equipment manufacturer that earned 100 additional flexibility allowances under the early Tier 4 engine incentive program from 100 horsepower engines, could ''trade'' those flexibilities into the next power category up (175 to 750 horsepower). The equipment manufacturer would generate 10,000 horsepower-allowances from those early engines (*i.e.*, 100 horsepower times 100 allowances). The equipment manufacturer could then produce, for this example, an additional 25 engines with a power rating of 400 horsepower above and beyond the normal limit on allowances (or any other combination of engines such that the sum of the horsepower-weighted allowances adds up to the 10,000 horsepower-allowances used in this

example). We are not allowing trading for engines in the 25 to 75 horsepower category because the Tier 4 standards for these engines are based on the application of only PM aftertreatment technology. Similarly, we are not allowing trading for engines in the above 750 horsepower category because the Tier 4 standards are based on the application of PM aftertreatment to all engines, but NO_X aftertreatment for only some engines.

f. Economic Hardship Relief Provision

With today's action, and as proposed, we are providing an additional Tier 4 transition flexibility for ''economic hardship relief'' for equipment manufacturers. Under the economic hardship relief provisions, an equipment manufacturer that does not make its own engines could obtain limited additional relief by providing evidence that, despite its best efforts, it cannot meet the implementation dates, even with the Tier 4 equipment flexibility program provisions outlined above. Such a situation could occur if an engine supplier without a major business interest in the equipment manufacturer were to change or drop an engine model very late in the implementation process. The purpose of the provision is to redress individual situations of extreme economic hardship, not merely to perpetuate existing market share. That is, if situations arise where one equipment maker cannot produce equipment using Tier 4-compliant engines by the compliance date, but another can, ordinarily EPA would not adjust the program to allow use of the non-compliant application absent extreme, compelling equitability considerations.

Applications for economic hardship relief will have to be made in writing, and will need to be submitted before the earliest date of noncompliance. The application will also have to include evidence that failure to comply is not the fault of the equipment manufacturer (such as a supply contract broken by the engine supplier), and include evidence that serious economic hardship to the company will result if relief is not granted. (As explained in section III.B.2.b above, this is a significant difference between this economic hardship provision and the technical hardship flexibility, where consideration of cost is generally irrelevant.) We expect to work with the applicant to ensure that all other remedies available under the flexibility provisions are exhausted before granting additional relief (if appropriate), and place a limit on the period of relief to no more than one year. Applications for economic hardship relief generally will only be accepted during the first year after the effective date of an applicable new emission standard.

The Agency expects this provision will be rarely used. This expectation has been supported by our initial experience with the Tier 2 standards in which only one equipment manufacturer has applied under the existing hardship relief provisions (and the request was subsequently denied). Requests for economic hardship relief will be evaluated by EPA on a case-by-case basis, and may require, as a condition of granting the applications, that the equipment manufacturer agree (in writing) to some appropriate measure to recover the lost environmental benefit.

Ingersoll-Rand commented that the provisions regarding eligibility for hardship relief should be revised so that they do not require a demonstration of severe economic hardship, noting that such a showing would invariably preclude large entities (like Ingersoll-Rand) from utilizing the provision, even though delays were beyond their control. As described earlier in this section, we have included an additional flexibility in the Tier 4 rule in order to provide additional needed lead time in appropriate, individualized circumstances based on a showing of extreme technical or engineering hardship. We believe the provisions of the technical hardship address the concerns noted by Ingersoll-Rand in their comments, and therefore we are not revising the existing economic hardship relief provisions (which require a demonstration of severe economic impact) for the Tier 4 final program.

g. Existing Inventory Allowance

The current program for nonroad diesel engines includes a provision for equipment manufacturers to continue to use engines built prior to the effective date of new standards, until the older engine inventories are depleted. It also prohibits stockpiling of previous tier engines. As proposed, we are extending these provisions for the transition to the Tier 4 standards adopted today. We are also extending the existing provision that provides an exception to the applicable compliance regulations for the sale of replacement engines. In extending this provision, we are requiring that engines built to replace certified engines be identical in all material respects to an engine of a previously certified configuration that is of the same or later model year as the engine being replaced. The term ''identical in all material respects'' allows for minor differences that would not reasonably be expected to affect emissions such as a change in materials or a change in the company supplying the components of the engine.

3. What Are the Recordkeeping, Notification, Reporting, and Labeling Requirements Associated With the Equipment Manufacturer Transition Provisions?

The following section describes the recordkeeping, notification, reporting, and labeling requirement being adopted today. As proposed, failure to comply with these requirements will subject the noncomplying party to penalties as described in 40 CFR 1068.101.

a. Recordkeeping Requirements for Engine and Equipment Manufacturers

With today's action, we are extending the recordkeeping requirements from the current equipment manufacturer transition program. Under the Tier 4 transition program, engine manufacturers will be allowed to continue to build and sell previous tier engines needed to meet the market demand created by the equipment manufacturer flexibility program, provided they receive written assurance from the engine purchasers that such engines are being procured for this purpose. Engine manufacturers will be required to keep copies of the written assurance from the engine purchasers for at least five full years after the final year in which allowances are available for each power category.

Equipment manufacturers choosing to take advantage of the Tier 4 allowances will be required to: (1) Keep records of the production of all pieces of equipment excepted under the allowance provisions for at least five full years after the final year in which allowances are available for each power category; (2) include in such records the serial and model numbers and dates of production of equipment and installed engines, and the rated power of each engine, (3) calculate annually the number and percentage of equipment made under these transition provisions to verify compliance that the allowances have not been exceeded in each power category; and (4) make these records available to EPA upon request.

b. Notification Requirements for Equipment Manufacturers

We are adopting new notification requirements for equipment manufacturers with the Tier 4 program. Under the Tier 4 transition program, equipment manufacturers wishing to participate in the Tier 4 transition provisions will be required to notify EPA prior to their use of the Tier 4

transition provisions. Equipment manufacturers will be required to submit their notification before the first calendar year in which they intend to use the transition provisions. We believe that prior notification will greatly enhance our ability to ensure compliance. Under the newly adopted notification requirements, each equipment manufacturer will be required to notify EPA in writing and provide the following information prior to the start of the first year in which the manufacturer intends to use the flexibilities:

(1) The nonroad equipment manufacturer's name, address, and contact person's name, phone number;

(2) The allowance program that the nonroad equipment manufacturer intends to use by power category;

(3) The calendar years in which the nonroad equipment manufacturer intends to use the exception;

(4) An estimation of the number of engines to be exempted under the transition provisions by power category;

(5) The name and address of the engine manufacturer from whom the equipment manufacturer intends to obtain exempted engines; and

(6) Identification of the equipment manufacturer's prior use of Tier 2/3 transition provisions.

Engine manufacturers supported the new notification requirements for equipment manufacturers. One equipment company, however, commented that the notification requirements are of minimal value and should be deleted. We disagree and continue to believe the new notification requirements will greatly enhance our ability to ensure compliance with the flexibility provisions. Given the limited information that must be provided by equipment manufacturers, we do not expect that the notifications will require any significant effort to pull the information together and submit to EPA.

EPA had requested comment on whether the notification provisions should also apply to the current Tier 2/Tier 3 transition program, and if so, how these provisions should be phased in for equipment manufacturers using the current Tier 2/Tier 3 transition provisions. We did not receive any comments on this issue. However, consistent with our approach to several other Tier 4 requirements that we were considering applying to the Tier 2/Tier 3 transition program, we are not adopting such notification requirements for equipment manufacturers for the current Tier 2/Tier 3 program.

c. Reporting Requirements for Engine and Equipment Manufacturers

As with the current program, engine manufacturers who participate in the Tier 4 program will be required to submit information each year on the number of such engines produced and to whom the engines are provided. The purpose of these submittals is to help EPA monitor compliance with the program and prevent abuse of the program.

We are adopting new reporting requirement for equipment manufacturers participating in the Tier 4 equipment manufacturer transition provisions. With today's action, equipment manufacturers participating in the program will be required to submit an annual written report to EPA that calculates its annual number of exempted engines under the transition provisions by power category in the previous year. Equipment manufacturers using the percent of production allowance, will also have to calculate the percent of production the exempted engines represented for the appropriate year. Each report will include a cumulative calculation (both total number and, if appropriate, the percent of production) for all years the equipment manufacturer is using the transition provisions for each of the Tier 4 power categories. In order to ease the reporting burden on equipment manufacturers, EPA intends to work with the manufacturers to develop an electronic means for submitting information to EPA.

EPA had requested comment on whether these new reporting requirements for equipment manufacturers should also apply to the current Tier 2/Tier 3 transition program, and if so, how these provisions should be phased in for equipment manufacturers using the current Tier 2/Tier 3 transition provisions. We did not receive any comments on this issue. However, consistent with our approach to several other Tier 4 requirements that we were considering applying to the Tier 2/Tier 3 transition program, we are not adopting reporting requirements for equipment manufacturers for the current Tier 2/Tier 3 program.

d. Labeling Requirements for Engine and Equipment Manufacturers

Engine manufacturers are currently required to label their certified engines with a label that contains a variety of information. Under today's action, as proposed, we are adopting requirements that engine manufacturers be required to identify on the engine label if the engine is exempted under the Tier 4 transition program. In addition, and also as proposed, equipment manufacturers will be required to apply a label to the engine or piece of equipment that identifies the equipment as using an engine produced under the Tier 4 transition program for equipment manufacturers.

Engine manufacturers were opposed to the new labeling requirements. We believe these new labeling requirements will allow EPA to easily identify the exempted engines and equipment, verify which equipment manufacturers are using these exceptions, and more easily monitor compliance with the transition provisions. Labeling of the equipment should also help U.S. Customs to quickly identify equipment being imported using the exemptions for equipment manufacturers.

4. What Are the Requirements Associated With Use of Transition Provisions for Equipment Produced by Foreign Manufacturers?

Under the current regulations in 40 CFR 89.2, importers are treated as equipment manufacturers and are each allowed the full allowance under the transition provisions in 40 CFR 89.102(d). Therefore, under the current provisions, importers of equipment from a foreign equipment manufacturer could as a group import more excepted equipment from that foreign manufacturer than 80% of that manufacturer's production for the U.S. market (*i.e.*, more than the percent-of-production), or more than the small-volume allowance. Therefore, the current regulation creates a potentially significant adverse environmental impact. EPA did not intend this outcome, and does not believe it is needed to provide reasonable lead time to foreign equipment manufacturers. EPA thus proposed to change the current regulations to eliminate this disparity.

As noted earlier, with today's action, only those nonroad equipment manufacturers that install engines and have primary responsibility for designing and manufacturing equipment will qualify for the allowances or other relief provided under the Tier 4 transition provisions. Foreign equipment manufacturers who comply with the compliance related provisions discussed below will receive the same allowances and other transition provisions as domestic manufacturers. Foreign equipment manufacturers who do not comply with these compliance related provisions will not receive allowances. Importers that have little involvement in the manufacturing and assembling of the equipment will not

receive any allowances or other transition relief directly, but can import exempt equipment if it is covered by an allowance or transition provision associated with a foreign equipment manufacturer. These provisions allow the transition allowances and other provisions to be used by foreign equipment manufacturers in the same way as domestic equipment manufacturers, while avoiding the potential for importers using unnecessary allowances.

Under today's action, a foreign equipment manufacturer includes any equipment manufacturer that produces equipment outside of the United States that is eventually sold in the United States. All foreign nonroad equipment manufacturers wishing to use the transition provisions will have to comply with all requirements of the regulation discussed above including: Notification, recordkeeping, reporting and labeling. Along with the equipment manufacturer's notification described earlier, a foreign nonroad equipment manufacturer will have to comply with various compliance related provisions similar to those adopted in several fuel regulations relating to foreign refiners.[68] As part of the notification, the foreign nonroad equipment manufacturer will have to:

(1) Agree to provide EPA with full, complete and immediate access to conduct inspections and audits;

(2) Name an agent in the District of Columbia for service of process;

(3) Agree that any enforcement action related to these provisions will be governed by the Clean Air Act;

(4) Submit to the substantive and procedural laws of the United States;

(5) Agree to additional jurisdictional provisions;

(6) Agree that the foreign nonroad equipment manufacturer will not seek to detain or to impose civil or criminal remedies against EPA inspectors or auditors for actions performed within the scope of EPA employment related to the provisions of this program;

(7) Agree that the foreign nonroad equipment manufacturer becomes subject to the full operation of the administrative and judicial enforcement powers and provisions of the United States without limitation based on sovereign immunity; and

(8) Submit all reports or other documents in the English language, or include an English language translation.

In addition to these requirements, we are adopting a new provision for foreign equipment manufacturers that participate in the transition program to comply with a bond requirement for engines imported into the U.S. We believe the bond requirements are an important tool to ensure that foreign equipment manufacturers are subject to the same level of enforcement as domestic equipment manufacturers. Furthermore, we believe that a bonding requirement for the foreign equipment manufacturer is an important enforcement tool in order to ensure that EPA has the ability to collect any judgements assessed against a foreign equipment manufacturer for violations of these transition provisions.

Under the bond program adopted today, a participating foreign equipment manufacturer will have to obtain annually a bond in the proper amount that is payable to satisfy United States judicial judgments that results from administrative or judicial enforcement actions for conduct in violation of the Clean Air Act. The foreign equipment manufacturer will have two options for complying with the bonding requirement. The foreign equipment manufacturer can:

(1) Obtain a bond in the proper amount from a third-party surety agent that is cited in the U.S. Department of Treasury Circular 570, ''Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies''; or

(2) Obtain an EPA waiver from the bonding requirement, if the foreign equipment manufacturer can show that it has assets of an appropriate value in the United States.

EPA expects the second bond option to address instances where an equipment manufacturer produces equipment outside the United States containing flexibility engines, but also has facilities (and thus significant assets) inside the United States. Under this second option, such a manufacturer can apply to the EPA for a waiver of the bonding requirement.

Because EPA's concerns of compliance will relate to the nature and tier of engines used in the transition equipment, we believe the bond value should be related to the value of the engine used. Therefore, we are adopting requirements that the bond be set at a level designed to represent approximately 10% of the cost of the engine for each piece of transition equipment produced for import into the United States under this program. So that manufacturers have certainty regarding the bond amounts and so that there isn't a need for extensive data submittals and evaluation between EPA and the manufacturer, the rule specifies the bond value for each imported engine based on the estimated average cost for a Tier 4 engine on which the bond would be based. Based on average engine cost estimates from table 6.2–5 of the final RIA, equipment using engines exempted under the transition program will require a bond in the amount shown in table III.B–3.

TABLE III.B–3.—BOND VALUE FOR ENGINES IMPORTED

[Under the Tier 4 Transition Program]

Power range	Per engine bond value (dollars)
0 < hp < 25	150
25 ≤ hp < 75	300
75 ≤ hp < 175	500
175 ≤ hp < 300	1,000
300 ≤ hp < 600	3,000
hp ≥ 600 hp	8,000

Depending on the number of engines/equipment brought into the U.S. each year, the value of the bond calculated using the above values could change from year to year. Under the provisions adopted today, an importer would calculate the estimated bond amount using the values in table III.B–3 and be required to obtain a bond equal to the highest bond value estimated over the seven-year flexibility period. Because we have the authority to bring enforcement actions against a manufacturer for five years beyond the end of the program, the manufacturer would be required to maintain the bond for five years beyond the end of the flexibility period or five years after using up all of its available allowances, whichever occurs first. Finally, if a foreign equipment manufacturer's bond is used to satisfy a judgment within the seven-year flexibility period, the foreign equipment manufacturer will then be required to increase the bond to cover the amount used within 90 days of the date the bond is used.

Most comments received on this issue supported the proposed provisions. However, Ingersoll-Rand commented that EPA should clarify whether the special requirements for foreign equipment manufacturers apply to U.S.-based companies that have foreign manufacturing facilities. Ingersoll-Rand believes that such requirements should not apply because EPA appears to be concerned about abuse of the program by foreign companies that export machines into the U.S. With today's action, all equipment manufacturers who import equipment into the U.S. will be required to comply with the provisions for foreign equipment manufacturers, even if they are U.S.-based companies. Because there is a wide range of actual presence in this country for ''U.S.-based'' companies,

[68] See, for example, 40 CFR 80.410 concerning provisions for foreign refiners with individual gasoline sulfur baselines.

EPA believes it is important that all companies importing equipment to the U.S. comply with the requirements for foreign equipment manufacturers. Neither the notification requirements described earlier for foreign equipment manufacturers nor the bonding requirements should cause any burden for companies with significant presence in this country. We would expect that only those companies with limited presence or no presence in this country will be impacted to any measurable degree because of the requirements placed on foreign equipment manufacturers.

In addition to the foreign equipment manufacturer requirements discussed above, EPA is also requiring importers of exempted equipment from a complying foreign equipment manufacturer to comply with certain provisions. EPA believes these importer provisions are essential to EPA's ability to monitor compliance with the transition provisions. Under today's action, each importer will be required to notify EPA prior to their initial importation of equipment exempted under the Tier 4 transition provisions. Importers will be required to submit their notification prior to the first calendar year in which they intend to import exempted equipment from a complying foreign equipment manufacturer under the transition provisions. The importer's notification will need to include the following information:

(1) The name and address of importer (and any parent company);

(2) The name and address of the manufacturers of the exempted equipment and engines the importer expects to import;

(3) Number of exempted equipment the importer expects to import for each year broken down by equipment manufacturer and power category; and

(4) The importer's use of the transition provisions in prior years (number of flexibility engines imported in a particular year, under what power category, and the names of the equipment and engine manufacturers).

In addition, EPA is requiring that any importer electing to import to the United States exempted equipment from a complying foreign equipment manufacturer will have to submit annual reports to EPA. The annual report will have to include the number of exempted equipment the importer actually imported to the United States in the previous calendar year; and the identification of the equipment manufacturers and engine manufacturers whose exempted equipment/engines were imported.

C. Engine and Equipment Small Business Provisions (SBREFA)

The Regulatory Flexibility Act (RFA) 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. As EPA believed that the ultimate rule could have a significant economic impact on small businesses, we prepared a regulatory flexibility analysis as part of this rulemaking. We prepared an Initial Regulatory Flexibility Analysis (IRFA) pursuant to section 603 of the RFA which is part of the record for the NPRM, and we prepared a Final Regulatory Flexibility Analysis (FRFA) to support today's action.

Under section 609(b) of the RFA, a Small Business Advocacy Review Panel (SBAR Panel or Panel) is required to be convened prior to publication of both an IRFA and a FRFA. Section 609(b) of the RFA directs the Panel to, through outreach with small entity representatives (SERs), report on the comments of the SERs and make findings under section 603 of the RFA on issues related to identified elements of an IRFA during the proposal stage of a rulemaking. During the development of the rulemaking, EPA is to analyze the elements of the IRFA in developing the FRFA for the final rulemaking (see section X.C of this preamble for more discussion on the elements of a FRFA). The purpose of the Panel was to gather information to identify impacts on small businesses and to develop potential regulatory options to mitigate these concerns. At the completion of the SBAR Panel process, the Panel prepared a Final Panel Report. This report includes:

- Background information on the proposed rule being developed;
- Information on the types of small entities that would be subject to the proposed rule;
- A description of efforts made to obtain the advice and recommendations of representatives of those small entities; and,
- A summary of the comments that had been received to date from those representatives.

The Panel report was included in the proposal's rulemaking record (and hence in the rulemaking record for this final rule), and provided the Panel and the Agency with an opportunity to identify and explore potential ways of shaping the rule to minimize the burden of the rule on small entities while achieving the rule's purposes and being consistent with Clean Air Act statutory requirements.

EPA approached this process with care and diligence. To identify representatives of small businesses for this process, we used the definitions provided by the Small Business Administration (SBA) for manufacturers of nonroad diesel engines and vehicles. The categories of small entities in the nonroad diesel sector that will potentially be affected by this rulemaking are defined in the following table:

Industry	Defined as small entity by SBA if:	Major SIC codes
Engine manufacturers.	Less than 1,000 employees.	Major Group 35
Equipment manufacturers:		
—construction equipment.	Less than 750 employees.	Major Group 35
—industrial truck manufacturers (*i.e.*, forklifts).	Less than 750 employees.	Major Group 35
—all other nonroad equipment manufacturers.	Less than 500 employees.	Major Group 35

One small engine manufacturer and 5 small equipment manufacturers agreed to serve as Small Entity Representatives (SERs) throughout the SBAR Panel process for this proposal. These companies represented the nonroad market well, as the group of SERs consisted of businesses that manufacture various types of nonroad diesel equipment.

The following are the provisions recommended by the SBAR Panel. As described in section III.B above, there are other provisions that apply to all equipment manufacturers; however, the discussion in this section focuses mainly on small entities.

1. Nonroad Diesel Small Engine Manufacturers

a. Lead Time Transition Provisions for Small Business Engine Manufacturers

i. Panel Recommendations and Our Proposal

The transition provisions recommended by the SBAR Panel for engines produced or imported by small entities are listed below. For all of the provisions, the Panel recommended that small business engine manufacturers and small importers must have certified engines in model year 2002 or earlier in order to take advantage of these provisions. Each manufacturer would be limited to 2,500 units per year as this number allows for some market growth. The Panel recommended these stipulations in order to prohibit the misuse of the transition provisions as a tool to enter the nonroad diesel market or to gain unfair market position relative to other manufacturers.

Currently, certified nonroad diesel engines produced by small manufacturers all have a horsepower rating of 80 or less. At proposal, we considered both a one-step approach, and the two-step approach which we are finalizing today. Due to the structure of the standards and their timing, EPA proposed transition provisions for small business engine manufacturers which encompassed both approaches recommended by the Panel, with the inclusion of the 2,500 unit limit (as suggested by the Panel) for each manufacturer. Given the two-step structure of the final rule, we are only providing those proposed provisions related to that approach (a complete description of the provisions proposed by the Panel, and also by specific Panel members, is located in the SBAR Final Panel Report).

For a two-step approach the Panel recommended that:

- An engine manufacturer should be allowed to skip the first phase and comply on time with the second; or,
- A manufacturer could delay compliance with each phase of standards for up to three years.

We proposed the following provisions in the NPRM (based on available data, we believe that there are no small manufacturers of nonroad diesel engines above the 75–175 hp category):

With regard to PM—

- Engines under 25 hp and those between 75 and 175 hp have only one standard so the manufacturer could delay compliance with these standards for up to three years.
- For engines between 50 and 75 hp, we proposed to delay compliance for one year if the 2008 interim standards are met, with the stipulation that small business manufacturers cannot use PM credits to meet the interim standard. However, if a small manufacturer elects the optional approach to the standard (elects to skip the interim standard), no further relief will be provided.

With regard to NO_X—

- There is no change in the level of the NO_X standard for engines under 25 hp and those between 50 and 75 hp, so we did not propose any special provisions for these categories.
- For engines in the 25–50 hp and the 75–175 hp categories we proposed a three year delay in the program consistent with the one-phase approach recommendation above.

ii. What We Are Finalizing

We are finalizing all of the provisions set out above for NO_X. For PM, we are finalizing some of the proposed provisions with certain revisions, as described below. In finalizing these provisions, we considered not only the recommendations of the Panel, but also the public comments on the proposed small business engine manufacturer transition provisions. Extensions of an applicable standard also apply to all certification requirements associated with that standards (so that transient and NTE testing would not be required until expiration of the extension). Based on available data, and further conversations with manufacturers during the development of this rulemaking (documented in the administrative record), we have found no small business manufacturers of nonroad diesel engines above 175 hp.

For engines under 25 hp:

- PM—a manufacturer may elect to delay compliance with the standard for up to three years.
- NO_X—there is no change in the level of the existing NO_X standard for engines in this category, so no special provisions are being provided.

For engines in the 25–50 hp category:

- PM—manufacturers must comply with the interim standards (the Tier 4 requirements that begin in model year 2008) on time, and may elect to delay compliance with the 2013 Tier 4 requirements (0.02 g/bhp-hr PM standard) for up to three years. Due to an oversight at proposal, we did not include transition provisions for this category in the NPRM, but there is no reason to exclude them when all other small business engines are eligible for extensions. We therefore are adopting a three year extension with today's action. As engines in this category must meet the 2008 standard, we are not conditioning this three year extension on meeting this standard. (Please note the distinction between these engines and engines in the 50–75 hp power band, where we are conditioning a three-year extension on meeting the 2008 standards. The difference is that engines in the 50–75 hp category have an option of whether or not to meet those 2008 standards. We consequently have structured the small business engine extension to encourage a choice to comply with those standards.)
- NO_X—a manufacturer may elect to delay compliance with the standard for up to three years.

For engines in the 50–75 hp category:

- As proposed, EPA is adopting special provisions for these engines, reflecting the special provisions in the rules which give engine manufacturers the choice of meeting an interim standard for PM in 2008 and meeting the aftertreatment-based standard in 2013, or meeting the aftertreatment-based standard in 2012 without meeting an interim standard. A small business engine manufacturer may delay compliance with the 2013 Tier 4 requirement of 0.02 g/bhp-hr PM for up to three years provided that it complies with the interim Tier 4 requirements that begin in model year 2008 on time, without the use of credits. We proposed an extension of only one year, but this would be inconsistent with the extension period we are adopting, and which we proposed, for all of the other power categories. In addition, this provision for 50–75 hp engines is structured to encourage small business engine manufacturers to opt for early PM reductions by meeting the 2008 interim PM standard, so that an extension of three years is appropriate as an incentive. We are requiring that these engines achieve the 2008 standard without use of credits to assure that there be improvements in actual performance by engines certifying to the standard. We believe that such assurance is a necessary and reasonable balance for the three year additional lead time for meeting the aftertreatment-based standard. There were no adverse comments on conditioning the extension in this manner.

In the alternative, a manufacturer may elect to skip the interim standard completely. However, manufacturers choosing this option will receive only one additional year for compliance with the 0.02 g/bhp-hr standard (*i.e.* compliance in 2013, rather than 2012). These engines would already have had eight years of lead time to prepare for the PM standard without any diversion of resources to meet an interim PM standard, so that an extension of longer than one year would not be appropriate,

within the meaning of section 213(b) of the Act. In addition, structuring the extension in this way encourages small engine manufacturers to choose to meet the 2008 interim standard for PM, furthering the objective of early PM emission reductions.

• NO_X—there is no change in the NO_X standard for engines in this category, therefore no special provisions are being provided.

For engines in the 75 to 175 hp category:

• PM—a manufacturer may elect to delay compliance with the standard for up to three years.

• NO_X—a manufacturer may elect to delay compliance with the standard for up to three years.

These provisions are also set out below in the following table (in all instances, these engines must meet the previously applicable standards as set out in § 1039.104 (c):

Horsepower category		Provision
<25 hp	NO_X	No special provisions are being provided.
	PM	Manufacturers may delay compliance with the standard for three years.
	NO_X	Manufacturers may delay compliance with the standard for three years.
25–50 hp	PM	Manufacturers must comply with the interim standards in 2008, and may delay compliance with the 2013 Tier 4 requirements (0.02 g/bhp-hr PM standard) for three years.
	NO_X	No special provisions are being provided.
		Manufacturers must comply with the interim Tier 4 requirements in 2008, without the use of credits, and may elect to delay compliance with the 2013 Tier 4 requirements (0.02 g/bhp-hr PM standard) for three years
50–75 hp	PM	—OR—
		Manufacturers may skip the interim standard completely, and will receive an additional year for compliance with the 0.02 g/bhp-hr PM Tier 4 standard (*i.e.* compliance in 2013, rather than 2012).
75–175 hp	NO_X	Manufacturers may delay compliance with the standard for three years.
	PM	Manufacturers may delay compliance with the standard for three years.

b. Hardship Provisions for Small Business Engine Manufacturers

i. Panel Recommendations and Our Proposals

The Panel recommended two types of hardship provisions for small business engine manufacturers. These provisions would allow for relief in the following cases:

• A catastrophic event, or other extreme unforseen circumstances, beyond the control of the manufacturer that could not have been avoided with reasonable discretion (*i.e.*, fire, tornado, supplier not fulfilling contract, etc.); and

• The event where a manufacturer has taken all reasonable business, technical, and economic steps to comply but cannot.

The Panel believed that either hardship relief provision would provide lead time for up to 2 years, and that a manufacturer should have to demonstrate to EPA's satisfaction that failure to sell the noncompliant engines would jeopardize the company's solvency. EPA may also require that the manufacturer make up the lost environmental benefit.

We proposed the Panel recommendations for hardship provisions for small business engine manufacturers. While perhaps ultimately not necessary given the phase-in schedule discussed above, we stated that such provisions provide a useful safety valve in the event of unforeseen extreme hardship.

ii. What We Are Finalizing

We received two comments on the provisions for small business engine manufacturers. SBA's Office of Advocacy commented that the rule would impose significant burdens on a substantial number of small entities with little corresponding environmental benefit; and further, that we should exclude smaller engines (those under 75 hp) from further regulation in order to comply with the Regulatory Flexibility Act and fulfill the requirement of reducing the burden on small engine classes. As proposed, we are not adopting standards based on performance of NO_X aftertreatment technologies for engines under 75 hp. As described in more detail in section II of this preamble, the Summary and Analysis of Comment Document, and the RIA, we have found no factual basis supporting the assertion that standards for PM for engines between 25 and 75 hp based on use of advanced aftertreatment impose costs out of relation to environmental benefit, have a disproportionate impact on small businesses, or are otherwise inappropriate. In fact, it is our finding that these standards for PM are ''appropriate'' within the meaning of section 213(a)(4) of the Clean Air Act, and that PM standards for these engines not based on performance of advanced aftertreatment would be inappropriate as failing to reflect standards based on available treatment for these engines (taking into account costs, noise, safety, and energy factors). We received no adverse comments from small business engine manufacturers on the proposed transition provisions for those manufacturers.[69] Accordingly, we are finalizing the small business engine manufacturer hardship provisions that we proposed in the NPRM (as recommended by the Panel). We believe that these provisions will provide adequate regulatory flexibility for these manufacturers, while remaining consistent with the requirements of section 213(a)(4) and 213(b) of the Clean Air Act.

c. Other Small Business Engine Manufacturer Issues

i. Panel Recommendations and Our Proposals

The Panel also recommended that an ABT program be included as part of the overall rulemaking program. In addition, the Panel suggested that EPA take comment on including specific ABT provisions for small business engine manufacturers. We proposed an ABT program for all engine manufacturers, with this program retaining the basic structure of the current nonroad diesel ABT program.

We did not include small business engine manufacturer-specific ABT

[69] The one comment that we received supported the provisions proposed for small business engine manufacturers.

provisions in the proposal. Discussions during the SBAR process indicated that small volume manufacturers would need extra time to comply due to cost and personnel constraints, and there is little reason to believe that small business manufacturer specific ABT provisions could create an incentive to accelerate compliance.

ii. What We Are Finalizing

As discussed above in section III.B, we are finalizing an ABT program in today's action similar to that already in place for nonroad engine manufacturers. We have also made a number of changes to accommodate implementation of these new emission standards.

2. Small Nonroad Diesel Equipment Manufacturers

a. Transition Provisions for Small Business Equipment Manufacturers

i. Panel Recommendations and Our Proposals

The Panel recommended that we adopt the transition provisions described below for small business manufacturers and small business importers of nonroad diesel equipment. These transition provisions are similar to those in the Tier 2/3 rule (see 40 CFR 89.102). The recommended transition provisions were as follows:

• Percent-of-Production Allowance: Over a seven model year period, equipment manufacturers may install engines not certified to the new emission standards in an amount of equipment equivalent to 80 percent of one year's production. This is to be implemented by power category with the average determined over the period in which the flexibility is used.

• Small Volume Allowance: A manufacturer may exceed the 80 percent allowance in seven years as described above, provided that the previous Tier engine use does not exceed 700 total over seven years, and 200 in any given year. This is limited to one family per power category. Alternatively, the Panel recommended, at the manufacturer's choice by hp category, a program that eliminates the ''single family provision'' restriction with revised total and annual sales limits as shown below:

—For categories ≤175 hp–525 previous Tier engines (over 7 years) with an annual cap of 150 units (these engine numbers are separate for each hp category defined in the regulations)

—For categories of > 175 hp–350 previous Tier engines (over 7 years) with an annual cap of 100 units (these engine numbers are separate for each hp category defined in the regulations).

The Panel recommended that EPA seek comment on the total number of engines and annual cap values listed above. In contrast to the Tier 2/Tier3 rule, the SBA Office of Advocacy expected the transition to the Tier 4 technology will be more costly and technically difficult. Therefore, the small business equipment manufacturers may need more liberal flexibility allowances especially for equipment using the lower hp engines. The Panel's recommended flexibility may not adequately address the approximately 50 percent of small business equipment models where the annual sales per model is less than 300 and the fixed costs are higher. Thus, the SBA Office of Advocacy and the Office of Management and Budget (OMB) Panel members recommended that comment be sought on implementing the small volume allowance (700 engine provision) for small business equipment manufacturers without a limit on the number of engine families which could be covered in any hp category.

• Due to the changing nature of the technology as the manufacturers make the transition from Tier 2 to Tier 3 and Tier 4, the Panel recommended that the equipment manufacturers be permitted to borrow from the Tier3/Tier 4 flexibilities for use in the Tier 2/Tier 3 time frame.

• Lastly, the Panel recommended proposing a continuation of the current transition provisions, without modifications to the levels or nature of the provisions, that are available to these manufacturers.

To maximize the likelihood that the application of these provisions will result in the availability of previous Tier engines for use by the small business equipment manufacturers, the Panel recommended that—similar to the application of flexibility options that are currently in place—these provisions should be provided to all equipment manufacturers.[70]

We did in fact propose the Percent-of-Production and Small Volume Allowances listed above for all equipment manufacturers, and explicitly took the Panel report into account in making that proposal. We also requested comment on a number of additional items, some of which were proposed by the Panel (see section III.B above).

[70] The Panel recognized that, similar to the Tier 2/3 standards, it may be necessary to provide transition provisions for all equipment manufacturers, not just for small entities, and the Panel recommended that this be taken into account.

ii. What We Are Finalizing

We are finalizing the Percent-of-Production and Small Volume Allowances for all equipment manufacturers, with a few changes. Some non-small equipment manufacturers commented that the small-volume provision should enable manufacturers to exempt up to 700 pieces of equipment over a seven-year period, with no engine family restriction. As explained earlier in section III.B.2.c, we are finalizing provisions that allow manufacturers to choose between two options: (a) Manufacturers would be allowed to exempt 700 pieces of equipment over seven years, within one engine family; or (b) manufacturers using the small-volume allowance could exempt 525 machines over seven years (with a maximum of 150 in any given year) for each of the three power categories below 175 horsepower, and 350 machines over seven years (with a maximum of 100 in any given year) for the two power categories above 175 horsepower. Concurrent with the revised caps, manufacturers could exempt engines from more than one engine family under the small-volume allowance program. As explained earlier, based on sales information for small businesses, we estimated that the alternative small-volume allowance program to include lower caps and allow manufacturers to exempt more than one engine family would keep the total number of engines eligible for the allowance at roughly the same overall level as the 700–unit program. The Agency believes that these provisions will afford manufacturers the type of transition leeway recommended by the Panel. Further, these transition provisions could allow small business equipment manufacturers to postpone any redesign needed on low sales volume or difficult equipment packages, thus saving both money and strain on limited engineering staffs. Within limits, small equipment manufacturers would be able to continue to use their current engine/equipment configuration and avoid out-of-cycle equipment redesign until the allowances are exhausted or the time limit passes.

During the SBREFA Panel process, the Panel discussed the possible misuse of the transition provisions by using them as a loophole to enter the nonroad diesel equipment market or to gain unfair market position relative to other manufacturers. See 68 FR at 28481. EPA was concerned that importers of equipment from a foreign equipment manufacturer could, as a group, import more exempted equipment from that foreign manufacturer than 80 percent of

that manufacturer's production for the United States market or more than the small volume allowances identified in the transition provisions. This would create a potentially significant disparity between the treatment of foreign and domestic equipment manufacturers. EPA did not intend this outcome, and did not believe it was needed to provide reasonable lead time to foreign equipment manufacturers. The Panel recognized that this was a possible problem, and believed that a requirement that small equipment manufacturers and importers must have reported equipment sales using certified engines in model year 2002 or earlier in order to be eligible to access the transition provisions was sufficient to alleviate this problem. Upon further analysis during the development of the proposal, EPA decided to limit the availability of transition provisions to entities that install engines and have primary responsibility for designing and manufacturing equipment and included such a requirement in the proposal. Id. at 28477. Therefore, a company that only imported equipment, and had no involvement in the actual manufacturing of the equipment, would be ineligible to access the transition provisions. As described in section III.B.4, we are finalizing the proposed requirements associated with the use of transition provisions by foreign importers. Therefore, we no longer believe it is necessary to have a separate requirement that small equipment manufacturers and importers have reported equipment sales using certified engines in model year 2002 or earlier, and therefore are not finalizing this redundant provision.

We are also finalizing the Panel's recommendation that equipment manufacturers be allowed to borrow from Tier 4 flexibilities in the Tier2/3 time frame. See the more extended discussion on this issue in section III.B.2.d above.

We are not finalizing the Panel recommendation of a provision allowing small manufacturers to request limited ''application specific'' alternative standards for equipment configurations which present unusually challenging technical issues for compliance. We do not believe that the need for such a provision has been established, and further, it could likely provide more lead time than can be justified, and undermine emission reductions which are achievable. Moreover, no participant in the SBAR process or during the public comment period offered any empirical support that such a problem even exists. Nor have such issues been demonstrated (or raised) by equipment manufacturers, small or large, in implementing the current nonroad standards. In addition, we believe that any application-specific difficulties can be accommodated by the transition provisions the Agency is proposing including ABT.

We are also finalizing two additional provisions for all equipment manufacturers that small business equipment manufacturers may take advantage of. These provisions are the Technical Hardship Provision and the Early Tier 4 Engine Incentive Program. Both provisions are discussed in greater detail in sections III.B.2.b and e above.

b. Hardship Provisions for Small Business Equipment Manufacturers

i. Panel Recommendations and Our Proposals

The Panel also recommended that two types of hardship provisions be extended to small business equipment manufacturers. These provisions would allow for relief in the following cases:

- A catastrophic event, or other extreme unforseen circumstances, beyond the control of the manufacturer that could not have been avoided with reasonable discretion (*i.e.*, fire, tornado, supplier not fulfilling contract, etc.).
- The event where a manufacturer has taken all reasonable business, technical, and economic steps to comply but cannot. In this case relief would have to be sought before there is imminent jeopardy that a manufacturer's equipment could not be sold and a manufacturer would have to demonstrate to the Agency's satisfaction that failure to get permission to sell equipment with a previous Tier engine would create a serious economic hardship. Hardship relief of this nature cannot be sought by an ''integrated'' manufacturer (one which also manufactures the engines for its equipment).

We proposed that the hardship provisions recommended by the Panel be extended to small business equipment manufacturers in addition to the transition provisions described above. We also requested comment on the stipulation that, to be eligible for these hardship provisions (as well as the other proposed transition provisions), equipment manufacturers and importers must have reported equipment sales using certified engines in model year 2002 or earlier.

ii. What We Are Finalizing

We are finalizing the Panel-recommended hardship provisions for small business equipment manufacturers (which are the same provisions that are being adopted for all equipment manufacturers).

EPA also received comment concerning the situation faced by small business equipment manufacturers using engines in the 25–50 horsepower range. The concern was raised that small businesses in this power grouping will face a greater relative burden in designing equipment for engines with aftertreatment, and that they may need additional lead time beyond that provided by the small volume allowances. EPA believes that in general the small volume allowances should provide reasonable lead time opportunity for these manufacturers, but recognizes that there may be individual cases where more lead time would be appropriate for small business manufacturers in this power category. EPA is therefore adopting a technical hardship provision similar to that adopted for the percent of production allowance. Small business manufacturers using engines in the 25–50 hp range could petition EPA to approve additional needed lead time in appropriate, individualized circumstances, based on a showing of extreme technical or engineering hardship as provided in 40 CFR 1039.625(m). EPA could approve additional small volume allowances, up to a total number of 1100 units. This total number includes the allowances that are already available under the rule without request. These additional allowances could only be used for engines in the 25–50 horsepower range, and could only be approved for qualifying small business equipment manufacturers. The limitations on the use of small volume allowances (such as when allowances may only be used within a single engine family and the annual limits) continue to apply to the standard allowances (that are available under the rule without request). Finally, any additional allowances granted under this provision would have to be used within 36 months after the transition flexibility period commences for these engines. The additional allowances would not be subject to the annual limits noted earlier but they could only be used after the maximum amount of standard allowances are used in a given year (*e.g.*, a manufacturer using the 700 unit allowance would have to use 200 of their standard allowances for that year before they could use any of the additional allowances granted by EPA under this technical hardship provisions).

EPA recognizes that it is important to facilitate the process for small business equipment manufacturers to seek such approval, and intends to work with

small manufacturers so that any transaction costs for them or for EPA can be minimized. For example, EPA could consider at one time a common request from similarly situated small business equipment manufacturers, as long as all of the necessary individual information for each applicant were provided. Given that information in such an application would still be both company- and fact-specific (and likely confidential as well), and that the criteria for relief as well as the scope of appropriate relief are case-specific, we would necessarily evaluate and decide whether or not to approve additional small volume allowances on a company-by-company, case-by-case basis.

For a detailed description of the comments received on small business engine and equipment manufacturer issues, please refer to the Summary and Analysis of comments, which is a part of the rulemaking record (E-DOCKET number OAR–2003–0012, and legacy docket number A–2001–28). A summary of the SBREFA process is located in section X.C of this preamble.

D. Certification Fuel

It is well-established that measured emissions may be affected by the properties of the fuel used during the test. For this reason, we have historically specified allowable ranges for test fuel properties such as cetane number and sulfur content. These specifications are intended to represent most typical fuels that are commercially available in use. This helps to ensure that the emissions reductions expected from the standards occur in use as well as during emissions testing.

We are establishing all 6 provisions that we proposed related to the sulfur content of fuel used in conducting nonroad diesel engine emissions testing:

- 300–500 ppm for model year 2008 to 2010 engines,
- 7–15 ppm for 2011 and later model year engines,
- Extension through model year 2007 of the maximum 2000 ppm specification for Agency testing on pre-Tier 4 engines,
- 7–15 ppm for 2007–2010 model year engines that use sulfur-sensitive technology,
- 7–15 ppm for 2008–2010 model year engines under 75 hp,
- 300–500 ppm for some model year 2006–2007 engines at or above 100 hp.

The last 3 of these provisions are at the certifying manufacturer's option, and involve additional measures that the manufacturer must take to help ensure that the specified fuel is used in the field. The below discussion provides more detail on each of these provisions.

We received very little comment on our proposed certification fuel provisions. Detroit Diesel commented that we should set a maximum sulfur specification of 500 ppm for Tier 3 engines, which we are in fact doing beginning in model year 2008 after this fuel is introduced in the nonroad market, and optionally allowing as early as 2006, the earliest Tier 3 model year, provided manufacturers take steps to encourage the use of this fuel, as discussed below.

Because we are lowering the upper limit for in-use nonroad diesel fuel sulfur content to 500 ppm in 2007, and again to 15 ppm in 2010, we are also establishing new ranges of allowable sulfur content for testing. These are 300 to 500 ppm (by weight) for model year 2008 to 2010 engines, and 7 to 15 ppm (by weight) for 2011 and later model year engines. We believe that these ranges best correspond to the fuels that diesel machines will potentially see in use.[71] These specifications will apply to emission testing conducted for certification, selective enforcement audits, in-use, and NTE testing, as well as any other laboratory engine testing for compliance purposes for engines in the designated model years. Any compliance testing of previous model year engines will be done with the fuels designated in our regulations for those model years. Note that, as proposed, we are allowing certification with fuel meeting the 7 to 15 ppm sulfur specification in 2010 for under 11 hp, air-cooled, hand-startable, direct injection (DI) engines certified under the optional standard provision discussed in section II.A.3.a.

It is important to note that while these specifications include the maximum sulfur level allowed for in-use fuel, we believe that it is generally appropriate to test using the most typical fuels. As for highway fuel, we expect that, under the 15 ppm maximum sulfur requirement, refineries will typically produce diesel fuel with about 7 ppm sulfur, and that the fuel could have slightly higher sulfur levels after distribution. Thus, we expect that we will use fuel having a sulfur content between 7 and 10 ppm sulfur for our emission testing. This is the same as the range we indicated will be used for heavy-duty diesel engine (HDDE) engine testing in model year 2007 and later (66 FR 5002, January 18, 2001). As with the highway fuel, should we determine that the typical in-use nonroad diesel fuel has significantly more sulfur than this, we would adjust this target upward.

We are also adopting two options for early use of the new 7 to 15 ppm sulfur diesel test fuel. The first will be available beginning in the 2007 model year for engines employing sulfur-sensitive technology. (Model year 2007 coincides approximately with the introduction of 15 ppm highway fuel.) This allowance to use the new fuel in model years before 2011 will only be available for engines which the manufacturer demonstrates will be operated in use on fuel with 15 ppm sulfur or less. Any testing that we perform on these engines will also use fuel meeting this lower sulfur specification. This optional certification fuel provision is intended to encourage the introduction of low-emission diesel technologies in the nonroad sector. These engines will be able to use the lower sulfur fuel throughout their operating life, given the early availability of this fuel under the highway program, and the assured availability of this fuel for nonroad engines by mid-2010.

Considering that our Tier 4 program will subject engines under 75 hp to new emission standards in 2008 when 15 ppm maximum sulfur fuel will be readily available from highway fuel pumps (and will enter the nonroad fuel market shortly after in 2010), we believe it is appropriate to provide a second, less proscriptive, option for use of 15 ppm sulfur certification fuel. This option will be available to any manufacturers willing to take extra steps to encourage the use of this fuel before it is required in the field. We are allowing the early use of 15 ppm certification fuel for 2008–2010 engines under 75 hp, provided the certifying manufacturer ensures that ultimate purchasers of equipment using these engines are informed that the use of fuel meeting the 15 ppm specification is recommended, and also recommends to equipment manufacturers buying these engines that labels be applied at the fuel inlet to remind users of this recommendation. This option does not apply to those 50–75 hp engines not being certified to the 0.22 g/bhp-hr PM standard, under the manufacturers' option discussed in section II.A.1.a.

We believe that there may be a very small loss of emissions benefit from any of these engines for which the operator chooses to ignore the recommendation. This is because the engine manufacturer will be designing the engine to comply with the emissions standards when tested using 15 ppm fuel, potentially resulting in slightly higher emissions when it is not operated on the 15 ppm

[71] *See* 66 FR 5112–5113 (January 18, 2001) where we adopted a similar approach to certification fuels for highway heavy-duty diesel engines (HDDEs).

fuel. We also believe, however, that this is more than offset overall by the encouragement this provision provides for early use of 15 ppm fuel. We are not making this option available for engine designs employing oxidation catalysts or other sulfur-sensitive exhaust emission control devices except under the more restrictive provision for early use of 15 ppm fuel described above, involving a demonstration by the manufacturer that the fuel will indeed be used. Because these devices could potentially have very high sulfur-to-sulfate conversion rates (see section II.B.4 and 5 above), and because very high-sulfur fuels will still be available to some extent, we believe that allowing this provision for these engines would risk very high PM emissions until the 15 ppm nonroad fuel is introduced. We are not making this second early 15 ppm test fuel option available for engines not subject to a new Tier 4 standard in 2008 as these engines should already be designed to meet applicable standards in earlier years without need for the 15 ppm fuel.

We are also adopting a similar provision for use of certification fuel meeting the 300–500 ppm sulfur specification before the 2008 model year. We believe certification of model year 2006 and 2007 engines being designed without the use of sulfur-sensitive technologies to meet new Tier 2 or Tier 3 emission standards taking effect in those years (2006 for engines at or above 175 hp and 2007 for 100–175 hp engines) should be able to use this fuel, provided the certifying manufacturer is willing to take measures equivalent to those discussed above to encourage the early use of this fuel (a recommendation to the ultimate purchaser to use fuel with 500 ppm maximum sulfur and a recommendation to equipment manufacturers to so label their equipment).

The widespread availability of 500 ppm sulfur highway fuel, the short time that these 2006 and 2007 engines could use higher sulfur fuels if an operator were to ignore the recommendation, and the eventual use of 15 ppm sulfur fuel in most of these engines for most of their operating lives, gives us confidence that this provision to encourage early use of lower sulfur fuel will be beneficial to the environment overall. As with the change to 300–500 ppm cert fuel for model years 2008–2010, engine manufacturers will design their engines to comply based on the test fuel specifications for certification and compliance testing. The change from a fuel specification for compliance testing that ranges up to 2000 ppm sulfur for Tier 2 and 3 engines to a specification of 500 ppm sulfur maximum could have some limited effect on the emissions control designs used on these Tier 2 and 3 engines, in that it will be slightly easier to meet the Tier 2 and 3 standards using the lower sulfur test fuel. In general, it is reasonable to set specifications of test fuel reflecting representative in-use fuels, and here the engines are expected to be using fuel with sulfur levels of 500 ppm or lower until 2010, and 15 ppm or lower after that. In this case, any impact on expected engine emissions from this change in test fuel for Tier 2 and 3 is expected to be slight.

We note that under current regulations manufacturers are already allowed to conduct testing with certification fuel sulfur levels as low as 300 ppm. The additional provision for early use of 300–500 ppm sulfur test fuel will, however, result in any compliance testing conducted by the Agency being done with fuel meeting the 300–500 ppm specification. Likewise choice of the option for early use of 15 ppm sulfur test fuel would result in any Agency testing being done using that fuel. However, under both of these early certification fuel options involving a recommended fuel use provision, the Agency will not reject engines from in-use testing for which there is evidence or suspicion that the engine had been fueled at some time with higher sulfur fuel.

Finally, we are extending a provision adopted in the 1998 final rule (63 FR 56967, October 23, 1998). In that rule we set a 2000 ppm upper limit on the test fuel sulfur concentration for any testing to be performed by the Agency on Tier 1 engines under 50 hp and Tier 2 engines at or above 50 hp. We did not extend this provision to later model year engines at that time because we felt that more time was needed to assess trends in fuel sulfur levels for fuels used in nonroad diesels. At this time we are not aware of any additional information that would indicate that a change in this test specification is warranted. More importantly, because the fuel regulation we are adopting will make 500 ppm maximum sulfur nonroad diesel fuel available by mid-2007, Tier 3 engines at or above 50 hp (which phase in beginning in 2006) will be in the field for only 1½ years prior to the in-use introduction of 500 ppm fuel, and Tier 2 engines under 50 hp (which phase in beginning in 2004) will be in the field for at most 3½ years prior to this time. We believe it is appropriate to avoid adding the unnecessary complication of frequent multiple changes to the test fuel specification. We are therefore extending the 2000 ppm limit to testing conducted on engines until the 2008 model year when the 500 ppm maximum test fuel sulfur level takes effect as discussed above.

E. Temporary In-Use Compliance Margins

The Tier 4 standards will be challenging for diesel engine manufacturers to achieve, and will require manufacturers to develop and adapt new technologies for a large number and wide variety of engine platforms. Not only will manufacturers be responsible for ensuring that these technologies enable compliance with Tier 4 standards at the time of certification, they will also have to ensure that these technologies continue to be highly effective in a wide range of in-use environments so that their engines will comply in use when tested by EPA. Furthermore, for the first time, these nonroad diesel engines will be subject to transient emissions control requirements and to NTE standards.

However, in the early years of a program that introduces new technology, there are risks of in-use compliance problems that may not appear in the certification process or during developmental testing. Thus, we believe that for a limited number of model years after new standards take effect it is appropriate to adjust the compliance levels for assessing in-use compliance for diesel engines equipped with high-efficiency exhaust emissions control devices. This provides assurance to the manufacturers that they will not face recall if they exceed standards by a small amount during this transition to clean technologies. This approach is very similar to that taken in the light-duty highway Tier 2 final rule (65 FR 6796, February 10, 2000) and the highway heavy-duty rule (66 FR 5113–5114, January 18, 2001), both of which involve similar approaches to introducing the new technologies. In fact, the similarities of nonroad diesel engines and expected Tier 4 control technologies to counterpart engines and technologies for heavy-duty highway diesel engines led us to model the proposed Tier 4 add-on provisions after the 2007 heavy-duty highway diesel program, with add-on levels chosen to be roughly equivalent to the levels adopted in the highway rule.

Comments on the proposal were received from engine manufacturers, requesting changes that would make the temporary in-use adjustments more closely parallel the highway requirements. Specifically, they requested: (1) Providing two full model years of applicability following the completion of standards phase-in for the

75–175 hp category, as was proposed for the other power categories, (2) adjusting the NO_X threshold for applicability of the provisions to a level 8% above the split family standard, (3) adopting 3 levels of add-ons based on how many hours the test engine had been used, with cutpoints at 2000 and 3400 hours, and (4) a 25% upward adjustment to the add-on levels. We agree that these changes would result in a closer approximation to the highway program. Our goal in proposing provisions somewhat different from the highway program was to avoid unnecessary complexity. However, we believe that maintaining consistency with the highway program is a more important goal and the manufacturers' suggested changes do not overly complicate the program, and so we have decided to make these changes.

We note too that changes we are making to the Tier 4 program for engines over 750 hp necessitate other changes to the in-use add-on program for these engines as well. Specifically, these are the extension of model year applicability to 2016, two years after the final Tier 4 standards take effect, and the clarification of what PM thresholds apply for engines used in generator sets and for other engines.

Table III.E–1 shows the in-use adjustments that we will apply. These in-use add-on levels will be applied only to engines certified in the indicated model years and having FELs (or certifying to standards without FELs) at or below the specified threshold levels. These adjustments are added to the appropriate FELs (see section III.A) or, for engines certified to the standards without the use of ABT program credits, to the standards themselves, in determining the in-use compliance level for a given in-use hours accumulation on the engine being tested. Note that the PM adjustment is the same for all in-use hours accumulation. Note also that, because the standards in the regulations are expressed in g/kW-hr, the adjustments included in the regulations are set at levels that make the resulting adjusted in-use standard equivalent in stringency to the standards in this preamble (expressed in g/bhp-hr) adjusted by the values in Table III.E–1 (also expressed in g/bhp-hr).

Note too that, as part of the certification demonstration, manufacturers will still be required to demonstrate compliance with the unadjusted Tier 4 certification standards using deteriorated emission rates. Therefore, the manufacturer will not be able to use these in-use standards as the design targets for the engine. They will need to project that most engines will meet the standards in-use without adjustment. The in-use adjustments will merely provide some assurance that they will not be forced to recall engines because of some small miscalculation of the expected deterioration rates.

TABLE III.E–1.—ADD-ON LEVELS USED IN DETERMINING IN-USE STANDARDS

Engine power	Model years	NO_X		PM
		Add-on level [a] (g/bhp-hr)	For operating hours	Add-On level [b] (g/bhp-hr)
25 ≤ hp <75 (19 ≤ kW <56)	2013–2014	none		0.01
75 ≤ hp <175 (56 ≤ kW <130)	2012–2016	0.12 0.19 0.25	≤ 2000 2001–3400 > 3400	0.01
175 ≤ hp ≤750 (130≤ kW ≤560)	2011–2015	0.12 0.19 0.25	≤ 2000 2001–3400 > 3400	0.01
hp >750 (kW >560)	2011–2016	0.12 0.19 0.25	≤ 2000 2001–3400 > 3400	0.01

Notes:

[a] Applicable only to those engines certifying to standards or with FELs at or below 1.6 g/bhp-hr NO_X.

[b] Applicable only to those engines certifying to standards or with FELs at or below the filter-based Tier 4 PM standards (0.01 g/bhp-hr for 75–750 hp engines, 0.02 g/bhp-hr for 25–75 hp engines and for >750 hp engines in generator sets, and 0.03 g/bhp-hr for all other >750 hp engines).

F. Test Cycles

1. Transient Test

In the 1998 final rule that set new emission standards for nonroad diesel engines, EPA expressed a concern that the steady-state test cycles used to demonstrate compliance with emission standards did not adequately reflect transient operation as many nonroad engines are used in applications that are largely transient in nature and would not therefore yield adequate control of emissions in use (63 FR 56984, October 23, 1998). Although we were not prepared to adopt a transient test at that time, we announced our intention in that final rule to move forward with the development of such a test. This development progressed steadily and has resulted in the creation of the Nonroad Transient Composite (NRTC) test cycle which we are adopting in our Tier 4 nonroad diesel program. The NRTC cycle supplements the existing nonroad steady-state test requirements. Thus, most nonroad engines subject to today's Tier 4 standards will be required to certify using both of these tests.[72] The NRTC cycle captures transient emissions over much of the typical nonroad engine operating range, and thus helps to ensure effective control of all regulated pollutants. The speed and load operating schedule for EPA's NRTC test cycle is described in regulations at 40 CFR 1039.505. A detailed discussion of the transient test cycle and its derivation is contained in chapter 4.2 of the RIA for this rule.

We expect that this transient test requirement will significantly reduce real world emissions from nonroad diesel equipment. Proper transient

[72] See EPA Dear Manufacturer Letter VPCD–98–13, ''Heavy-duty Diesel Engines Controlled by Onboard Computers: Guidance on Reporting and Evaluating Auxiliary Emission Control Devices and the Defeat Device Prohibition of the Clean Air Act,'' October 15, 1998 and EPA Advisory Circular 24–3, ''Implementation of Requirements Prohibiting Defeat Devices for On-Highway Heavy-Duty Diesel Engines.'' A copy of both of these documents is available in EPA Air Docket A–2001–28.

operation testing captures engine emissions from the broad range of engine speed and load combinations that the engine may attain in-use, while the steady-state emission test characterizes emissions at the few isolated operating points that may be typical for that family of engines. Testing for transient emissions will likewise identify emissions which result from the operation of the engine, as with speed and load changes, turbocharger lag, etc.

In keeping with our goal to maximize the harmonization of emissions control programs as much as possible, we have developed this cycle in collaboration with nonroad engine manufacturers and regulatory bodies, both domestic and foreign, over the last several years.[73] Further, the NRTC cycle has been introduced as a work item for possible adoption as a potential global technical regulation under the 1998 Agreement for Working Party 29 at the United Nations.[74]

EPA's nonroad transient test will apply (with one exception noted below) to a nonroad diesel engine when that engine must first show compliance with EPA's Tier 4 PM and NO_X+NMHC emissions standards which are based on the performance of the advanced post-combustion emissions control systems (*e.g.* catalyzed-diesel particulate filters and NO_X adsorbers). This is 2011 for engines at 175 hp–750 hp, 2012 for 75–175 hp engines (2012, as well, for 50–75 hp engines made by a manufacturer choosing the option to not comply with the 2008 transitional PM standard.), and 2013 for engines under 75 hp. The transient test cycle will not apply to engines greater than 750 hp. Specific provision is made for engines under 25 hp for PM and under 75 hp for NO_X (which are not based on performance of advanced aftertreatment). Constant-speed, variable-load engines of any horsepower category currently certify to EPA's 5–Mode Steady State duty cycle and are not subject to transient duty cycle testing. As with current nonroad diesel standards, today's Tier 4 emission standards will apply to certification, Selective Enforcement Audits (SEAs) and to recall testing of equipment in-use for all engines subject to these standards.

TABLE III.F–1.—IMPLEMENTATION MODEL YEAR FOR NONROAD TRANSIENT TESTING

Power category	Transient test implementation model years
< 25 hp	2013
25 ≤ hp < 75	2013
75 ≤ hp < 175	2012
175≤ hp < 750	2011

In addition, any engines for which an engine manufacturer (see section III.M) or equipment maker (see section III.B.2.c) claims credit under the incentive program for early-introduction engines will have to be certified to that program's standards under applicable Tier 4 nonroad transient and steady-state duty cycles, *e.g.*, NRTC, 8-mode and 5-mode steady-state cycles. In turn, any 2011 or later model year engine that uses these engine count-based credits will not need to demonstrate compliance under the NRTC cycle. Engines in any power category certified to an alternate NO_X standard are all subject to the transient test requirement, as they clearly will be substantially redesigned to achieve Tier 4 compliance, regardless of whether or not they use high-efficiency exhaust emission controls. *See* section II.A.1.c above.

We solicited comment on whether the transient duty cycle should apply to NO_X emissions from phase-out engines (68 FR 28484, May 23, 2003) and received comment from EMA. EMA prefers that the transient cycle only be applicable to PM emission testing and not for NO_X, NMHC and CO for phase-out engine families. They believe that the application of the transient NRTC and standards could result in the need to redevelop the NO_X/NMHC/CO emission control systems used for their members' compliance with Tier 3 standards.

We essentially agree with this comment to the extent that phase-out engines do not include improvements in gaseous pollutant emission control (*i.e.* they remain essentially Tier 3 engines for emissions other than PM). Imposing new requirements with respect to these engines' gaseous pollutant emissions could divert resources inappropriately. The rule therefore states (in 40 CFR 1039.102 (a)(2)) that gaseous pollutant emissions from these engines are not subject to transient testing standards. This would not apply if a manufacturer declares a new NO_X+NMHC FEL for the engine family (since the manufacturer would then already be choosing to alter these engines' performance with respect to gaseous pollutant emissions).[75]

Transient testing standards do apply with respect to PM emissions from phase-out engines, however. The reason is evident: the PM standard for phase-out (and phase-in) engines is based on performance of aftertreatment, so the full complement of test cycles (NTE as well as transient testing) should apply. A consequence of this is that phase-out engines will generally be tested over the transient cycle, since they must do so with respect to PM emissions. We repeat, however, that although the engines will do transient testing, only PM (and not gaseous pollutants) is subject to the transient test standard.

In addition, manufacturers choosing to certify engines under 750 hp using alternative FEL caps during the first four years that the alternative caps are available (see section III.A.i.2 above) will not be subject to the transient or NTE standards. However, to properly account for the transient effects when calculating credits, we are requiring the FELs of such engines to be adjusted upwards by applying a Temporary Compliance Adjustment Factor (TCAF)[76]. See 40 CFR 1039.104 (g) (2).

Even though we are requiring that NRTC testing start when the PM aftertreatment-based standards take effect, one should not infer that the NRTC is directed at solely (or even primarily) at PM control. In fact, we believe that advanced NO_X emission controls may be even more sensitive to transient operation than PM filters, since the PM filters ordinarily operate equally effectively in all operating modes, as noted earlier. It is, however, our intent that the control of emissions during transient operation be an integral part of Tier 4 engine design considerations. We have therefore chosen to apply the transient test requirement starting with the PM filter-based Tier 4 PM standards as these standards precede or accompany the earliest Tier 4 NO_X or NMHC standards in all power categories except engines over 750 hp.

As EPA is not promulgating PM filter-based standards for engines below 25 hp in today's rulemaking, we are likewise not requiring these engines to be tested

[73] Letter from Jed Mandel of the Engine Manufacturers Association to Chet France of U.S. EPA, Office of Transportation and Air Quality, ''Development of appropriate transient test cycle for variable speed land-based compression ignition non-road engines,'' Air Docket A–2001–28, II–B–33.

[74] Informal Document No.2, ISO—45th GRPE, ''Proposal for a Charter for the Working Group on a New Test Protocol for Exhaust Emissions from Nonroad Mobile Machinery,'' Jan. 13–17, 2003, Air Docket A–2001–28, document II–A–171.

[75] Please note that this discussion does not apply to engines certifying to the alternative NO_X phase-in standards, which engines are required to meet transient and NTE requirements for gaseous pollutants (as well as all other requirements that would apply to phase-in engines). See discussion at II.A.2.c; also please note that these engines are expressly not defined as phase-out engines in the rules; see section 1039.801 and 1039.102 (e).

[76] As noted elsewhere, the TCAFs are derived identically to the Transient Adjustment Factor used in the NONROAD emissions model.

over the NRTC test cycle until model year 2013. More broadly, though we intend for transient emissions control to be an integral part of Tier 4 design considerations, we do not believe it appropriate to mandate compliance with the transient test for the engines under 50 hp which are subject to PM standards in 2008. We recognize that transient emission testing, though routine in highway engine programs, involves a fair amount of laboratory equipment and new expertise in the nonroad engine certification process. As with the transfer of advanced emission control technology itself, we believe that the transient test requirement should be implemented first for larger displacement engines. These engines are more likely to be made by manufacturers who provide engines to the on-highway market and therefore have had prior on-highway engine development and certification experience. We do not believe that the smaller engines should be the power categories first charged with implementing the new transient test, as early as 2008, especially because manufacturers of these engines do not generally make highway engines and are neither as experienced nor as well-equipped as their larger engine manufacturer counterparts at conducting transient cycle testing. However, to encourage earlier transient emission control in these engines, EPA will allow manufacturers of engines below 25 hp to submit data describing emission levels for their engines over the appropriate certification transient duty cycle beginning in model year 2008. We extend this option as well to manufacturers of 25–50 hp engines, subject to those engines meeting the Tier 4 transitional PM standard in 2008. Should a manufacturer choose to submit data in the 2008–2011 time frame, prior to required certification data submissions, that transient data will not be used for compliance enforcement.

EPA requested comment on whether engines greater than 750 hp should be subject to the transient cycle, noting concerns of technical difficulties and cost for these engines (68 FR 28484, May 23, 2003). STAPPA–ALAPCO and other agencies representing the States' interests responded to EPA that all nonroad engines should be uniformly required to test their transient emissions. Likewise, they asked that the Agency not delay implementation of this particular requirement. However, at this time, the Agency is not adopting a transient emission testing requirement for engines 750 hp and over. EPA sees the burden of transient cycle testing in these very large displacement engines as being greater than the benefit of gathering transient emission measurements from them. For example, in many instances, these engines will have multiple aspiration and exhaust systems requiring a test cell designed to accommodate multiple large flow volumes in real-time on a five Hertz, or faster, basis. New transient test requirements could require manufacturers to create new or expanded testing facilities to house, prepare and run transient tests on these larger engines. The space requirements, *i.e.*, ''footprint,'' of such facilities could make building them cost-prohibitive.

Absent transient testing, these engines will still be required to certify to both steady-state and NTE test requirements. Moreover, we are modifying the certification requirements to include additional information for engines under 750 hp. For more detail on this submission, see the discussion in section III.I of this preamble and 40 CFR 1039.205(p) of the regulations.

Finally, engines in this power category are found in a relatively small proportion of the nonroad equipment population and, despite the potential for large quantities of emissions from this class of engines during operation, units equipped with these engines have likewise been noted to contribute a small proportion of total diesel nonroad engine emissions.[77] Many of these larger-displacement engines operate predominately in a constant-speed fashion with few transient excursions, as with electric power generation sets (gen sets) which make up a significant percent of these larger engines. Many of these gen sets, too, operate on an intermittent or stand-by only basis. Indeed, as explained below, such constant-speed, variable-load engines (for example, those certifying exclusively to the 5-mode steady-state cycle) of any horsepower category are not subject to the nonroad transient test cycle.

Further, the Agency does not intend at this time to require that manufacturers use partial-flow sampling systems (PFSS) to determine PM emissions from their engines for certification. A large engine manufacturer may, however, choose to submit PM data to the Agency using PFSS as an alternative test method, if that manufacturer can demonstrate test equivalency using a paired-T test and F-Test, as outlined in regulations at 40 CFR 86.1306–07.

Transient testing requires consideration of statistical parameters for verifying that test engines adequately follow the prescribed schedule of speed and load values. The regulations in 40 CFR 1065.514, table 1, detail these statistical parameters, also known as cycle performance statistics. These values are somewhat different than the comparable values for highway diesel engines to take into account the characteristics of nonroad engine operation. The values are an outgrowth of the long development process for the NRTC test cycle, itself.

2. Cold Start Transient Testing

Nonroad diesel engines typically operate in the field by starting and warming to a point of stabilized hot operation at least once in a workday. Such ''cold-start'' conditions may also occur at other times over the course of the workday, such as after a lunch break. We have observed that certain test engines, which generally had emission-control technologies for meeting Tier 2 or Tier 3 standards, had elevated emission levels for about 10 minutes after starting from a cold condition. The extent and duration of increased cold-start emissions will likely be affected by changing technology for meeting Tier 4 standards, but there is no reason to believe that this effect will lessen. In fact, cold-start concerns are especially pronounced for engines with catalytic devices for controlling exhaust emissions, because many require heating to a ''light-off'' or peak-efficiency temperature to begin working. See, for example, RIA section 4.1.2.2 and following. EPA's highway engine and vehicle programs, which increasingly involve such catalytic devices, address this by specifying a test procedure that first measures emissions with a cold engine, then repeats the test after the engine is warmed up, weighting emission results from the two tests for a composite emission measurement.

In the proposal, we described an analytical approach that led to a weighting of 10 percent for the cold-start test and 90 percent for the hot-start test. Manufacturers pointed out that their analysis of the same data led to a weighting of about 4 percent for cold-start testing and that a high cold-start weighting would affect the feasibility of the proposed emission standards. Manufacturers also expressed a concern that there would be a significant test burden associated with cold-start testing.

[77] Memorandum from Kent Helmer to Cleophas Jackson, ''Applicability EPA's NRTC cycle to Nonroad Diesel Population,'' Air Docket A–2001–28, document II–B–34.

Unlike steady-state tests, which always start with hot-stabilized engine operation, transient tests come closer to simulating actual in-use operation, in which engines may start operating after only a short cool-down (hot-start) or after an extended soak (cold-start). The new transient test and manufacturers' expected use of catalytic devices to meet Tier 4 emission standards make it imperative to address cold-start emissions in the measurement procedure.[78] We are therefore adopting a test procedure that requires measurement of both cold-start and hot-start emissions over the transient duty cycle, much like for highway diesel engines. We acknowledge, however, that limited data are available to establish an appropriate cold-start weighting. For this final rule, we are therefore opting to establish a cold-start weighting of 5 percent. This is based on a typical scenario of engine operation involving an overnight soak and a total of seven hours of operation over the course of a workday. Under this scenario, the 20–minute cold-start portion constitutes 5 percent of total engine operation for the day. Section II.B above addresses the feasibility of meeting the emission standards with cold-start testing. Regarding the test burden associated with cold-start testing, we believe that manufacturers will be able to take steps to minimize the burden by taking advantage of the provision that allows for forced cooling to reduce total testing time (40 CFR 1039.510(c)).

We believe the 5-percent weighting is based on a reasonable assessment of typical in-use operation and it addresses the need to design engines to control emissions under cold-start operation. We believe cold-start testing with these weighting factors will be sufficient to require manufacturers to take steps to minimize emission increases under cold-start conditions. Once manufacturers have applied technologies and strategies to minimize cold-start emissions, they will be achieving the greatest degree of emission reductions achievable under those conditions. A higher weighting factor for cold-start testing is not likely be more effective in achieving in-use emission control as new technologies will be expected to have resulted in significant control of emissions at engine startup.

However, given our interest in controlling emissions under cold-start conditions and the relatively small amount of information available in this area at this time, we intend to revisit the cold-start weighting factor for transient testing in the future as additional data become available. Since the composite transient test represents a combination of variable-speed and constant-speed operation, we would consider operation from both of these types of engines in evaluating the cold-start weighting. Also, we intend to apply the same cold-start weighting when we adopt a transient duty cycle specifically for engines certified only for constant-speed operation.

The planned data-collection effort will focus on characterizing cold-start operation for nonroad diesel equipment. The objective will be to reassess, and if necessary, redevelop a weighting factor that properly accounts for the degree of cold-start operation so that in-use engines effectively control emissions during these conditions. As we move forward with this investigation, other interested parties, including the State of California, will be invited to participate. We are interested in pursuing a joint effort, in consultation with other national government bodies, to ensure a robust and portable data set that will facilitate common global technical regulations. This effort will require consideration of at least the following factors:

- What types of equipment will we investigate?
- How many units of each equipment type will we instrument?
- How do we select individual models that will together provide an accurate cross-section of the type of equipment they represent?
- When will the program start and how long will it last?
- How should we define a cold-start event from the range of in-use operation?

We expect to complete our further evaluation of the cold-start weighting in the context of the 2007 Technology Review, if not sooner. In case changes to the regulation are necessary, this timing will allow enough time for manufacturers to adjust their designs as needed to meet the Tier 4 standards.

3. Constant-Speed Tests

The Agency proposed that engine manufacturers could certify constant-speed engines using EPA's Constant-Speed, Variable-Load (CSVL) transient duty cycle[79] as an alternative to certifying these engines under its NRTC test cycle. The CSVL transient cycle was developed to approximate the speed and load operating characteristics of many constant-speed nonroad diesel applications.[80] It, too, would have been subject to the cold-start requirement of nonroad transient test cycles as is the NRTC. However, after considerable discussion with and comment from engine manufacturers, equipment makers and other interested parties, the Agency has decided not to promulgate an alternative nonroad transient test cycle for constant-speed engines at this time. EMA, in its comments on the CSVL cycle, felt generally that: (1) The average load factor is much too low; (2) the frequency of the transient operations was too high; (3) the amplitudes of the transients were too great; and (4) the rates of transient load increase and response were too fast.

It was further noted that the CSVL test cycle is based solely upon the operation of a single, relatively small, naturally-aspirated arc welder engine, which EMA claims is a variable-speed type of engine certified generally on the 8-mode test cycle. Arc welders, Cummins noted, are not much like generator sets, which comprise around 50% of population of constant-speed engines and have a very different operation and test cycle than the typical portable generator set. Generator sets, DDC wrote, were built generally for a higher power capability at a single speed, many having larger, less-responsive turbochargers to achieve the higher brake mean effective pressure (BMEP). This made it difficult for these engines to shed load as quickly as the CSVL test cycle would require them to do. Commenters likewise wrote that the test cycle was costly and burdensome for equipment which, like generator sets, was only operated infrequently or when emergencies occurred. Some wrote that it would compromise generator set engine performance if manufacturers had to re-engineer their products to run over the CSVL test cycle, especially for larger BMEP engines. One commenter noted that these changes to nonroad engines would carry over to other stationary applications of these generator sets. A more extensive discussion of comments relating to the CSVL cycle may be read in the Summary and Analysis of Comment document for this rule.

Given these potential problems and the strong possibility of fixing them by 2007, the Agency has decided to defer adopting the CSVL test cycle here.

[78] Note that this discussion applies only to engines that are subject to testing with transient test procedures. For example, this excludes constant-speed engines and all engines over 750 hp.

[79] Two Memoranda from Kent Helmer to Cleophas Jackson, ''Speed and Load Operating Schedule for the Constant Speed Variable Load (CSVL) transient test cycle,'' e-Docket OAR–2003–0012–0993, and ''CSVL Cycle Construction,'' A–2001–28, II–B–50.

[80] Memorandum from Kent Helmer to Cleophas Jackson, ''Brake-specific Emissions Impact of Nonroad Diesel Engine Testing Over the NRTC, AWQ, and AW1 duty cycles,'' Docket A–2001–28, #.

Instead, EPA with all of its stakeholders in this regard will map out a process of engine testing and analysis to better characterize constant-speed equipment in-use to design the most appropriate test cycle for the largest number of constant-speed engines. EPA undertakes this process with an eye to initiating rulemaking which would lead to promulgation of a transient cycle for constant-speed engines before the Agency's 2007 Nonroad Diesel Technical Review.

EPA defines a constant-speed engine in this regard as one which is certified to constant-speed operation, in other words, an engine which may not operate at a speed outside a single, fixed reference speed set by the engine's governor. It should be clear then that any engine for which the governor doesn't strictly limit the engine speed in-use to constant-speed operation, that engine will be subject to the NRTC. Thus, if a manufacturer's engine is certified to EPA's 8-mode steady-state test, the engine would also need to certify to the NRTC, since the 8-mode test does not limit the engine's fixed operating speed. Conversely, those manufacturers who certify their engines to EPA's constant-speed steady-state test, the 5-mode test cycle, are not required to have their engines certify to the NRTC.

By utilizing an inclusive, data-driven approach (see Summary and Analysis document for more detail), the Agency is allowing time to develop, and if appropriate, finalize and implement a test procedure that meets the needs of the Agency, manufacturers, and other parties in advance of the 2007 Technology Review. In fact, the Agency envisions constant speed variable load cycle generation to be completed by July 2005. This approach should allow the Agency to develop a testing program which ensures robust control in-use, is data-driven and remains globally harmonized. We expect to initiate this effort within 3 months of promulgation of this rule and to conclude the work on the new test cycle in enough time to promulgate it through rulemaking and to provide industry adequate lead time to implement it in an orderly manner. If we encounter unforeseen and unavoidable delays or complications in this process, we will consider approaches to control based on available data at the time of the 2007 Technology Review.

The Agency is adopting additional requirements, in conjunction with existing steady-state test requirements, which will help ensure that constant-speed nonroad diesel engines are subject to a rigorous program of in-use control of emissions and that diesel engine emissions will be controlled over a wide range of speed and load combinations. EPA is finalizing stringent nonroad NTE limits and related test procedures for all new nonroad diesel engines subject to the Tier 4 emissions standards beginning in 2011 which will supplement the existing steady-state five-mode test cycle for constant-speed application engines. NTE testing for transient operation will add further assurance that emissions from constant-speed engines within this class, which have a limited speed response in-use, are controlled under in-use operation. Typically, engines which are designed to a particular transient cycle will control emissions effectively under other types of transient operation not specifically included in that certification procedure. Engines that are capable of meeting emission standards on a constant-speed, variable-load cycle will have the transient-response characteristics that are appropriate for controlling emissions at higher engine loads and for less dynamic transient operation. EPA, engine manufacturers, and interested parties will, in the mean time, work to develop a more appropriate transient test for constant-speed engines. A transient test for this broad class of nonroad engines will ensure a robust level of emissions control in-use within the diverse population of constant-speed engines and equipment.

4. Steady-State Tests

Recognizing the variety of both power classes and work applications to be found within the nonroad equipment and engine population, and as proposed, EPA is retaining current Federal steady-state test procedures for nonroad engines. (Manufacturers are thus required to meet emission standards under steady-state conditions, in addition to meeting emission standards under the transient test cycle, whenever the transient test cycle applies.) This requirement, like NTE emission testing, is one of two tests which apply to every Tier 4 engine. Table III–2 below sets out the particular steady-state duty cycle applicable to each of the following categories: (1) Nonroad engines 25 hp and greater; (2) nonroad engines less than 25 hp; and (3) nonroad engines having constant-speed, variable-load applications, (*e.g.*, gen sets). The steady-state cycles remain, respectively, the 8-mode cycle, the 6-mode cycle and the 5-mode cycle.[81]

Steady-state test cycles are needed so that testing for certification will reflect the broad range of operating conditions experienced by these engines. A steady-state test cycle represents an important type of modern engine operation, in power and speed ranges that are typical in-use. The mid-to-high speeds and loads represented by present steady-state testing requirements are the speeds and loads at which these engines are designed to operate for extended periods for maximum efficiency and durability. Details concerning the three steady-state procedures for nonroad engines and equipment are found in regulations at 40 CFR 1039.505 and in Appendices I–III to 40 CFR part 1039.

Manufacturers will perform each steady-state test following all applicable test procedures in the regulations at 40 CFR part 1039, *e.g.*, procedures for engine warm-up and exhaust emissions measurement. The testing must be conducted with all emission-related engine control variables in the maximum NO_X-producing condition which could be encountered for a 30 second or longer averaging period at a given test point. Table III.F–2 below summarizes the steady-state testing requirements by individual engine power categories.

TABLE III.F–2.—SUMMARY OF STEADY-STATE TEST REQUIREMENTS

Nonroad engine power classes	Steady-state testing requirements		
	8-Mode cycle (C1 weighting)	6-Mode cycle (G3 weighting)	5-Mode cycle (D2 weighting)
hp < 25 (kW < 19)	applies [a]	applies [a]	applies [b]
25 ≤ hp < 75 (19 ≤ kW < 56)	applies	NA [c]	applies [b]
75 ≤ hp < 175 (56 ≤ kW < 130)	applies	NA [c]	applies [c]

[81] These three steady-state test cycles are similar to test cycles found in the International Standard ISO 8178–4:1996 (E) and remain consistent with the existing 40 CFR part 89 steady-state duty cycles.

TABLE III.F–2.—SUMMARY OF STEADY-STATE TEST REQUIREMENTS—Continued

Nonroad engine power classes	Steady-state testing requirements		
	8-Mode cycle (C1 weighting)	6-Mode cycle (G3 weighting)	5-Mode cycle (D2 weighting)
175 ≤ hp ≤ 750 (130 ≤ kW ≤ 560)	applies	NA [c]	applies [b]
hp > 750 (kW > 560)	applies	NA [c]	applies [b]

[a] Manufacturers may use either of these tests for this class of engines.
[b] For constant, or nearly constant, speed engines and equipment with variable, or intermittent, load.
[c] Testing procedures not applicable to this class of engines.

Nonroad engine manufacturers [82], have called for steady-state testing which would collect emissions continuously ''in a pseudo-transient manner,'' proposing in effect, one-filter PM collections during a steady-state duty cycle. In response to these and other manufacturer concerns for emission variability during certification testing due to unanticipated emission control system regeneration between steady-state test modes, the Agency [83] has adopted, in its 40 CFR 1065.515 regulations, the concept of modifying EPA's 40 CFR part 89 steady-state engine certification duty cycles. The section describes ramped ''modal'' steady-state certification tests which would link the modes of a steady-state test together for the purpose of collecting a continuous stream of engine emissions. These tests provide for operating an engine at all of the modes specified in the present steady-state nonroad test cycles but without the breaks in emission collection required by switching between modes, stabilizing engine operation, and collecting emissions at that next operating mode. Since a ramped modal cycle (RMC) test cycle may more reliably and consistently report engine emissions from particulate trap and other emission control hardware-equipped nonroad engines than the comparable steady-state duty cycle from which it was derived, the Agency is providing the option of using these RMC versions of its steady-state engine duty cycles for nonroad diesel engine certification testing in lieu of the otherwise applicable steady-state cycles. Details on the procedures may be found in chapter 4.2 of the RIA for this rule and at regulations at 40 CFR 1039.505 and Appendix I of part 1039.

The optional RMC duty cycles do not represent a relaxation in stringency of emission testing nor are they an unreasonable increase in the emission test burden of diesel engine manufacturers. Rather, the RMC versions of EPA's steady-state test cycles allow for more consistent and predictable emission testing of emission control system hardware-equipped diesel engines. Eliminating the ''downtime'' between modes for the emission collection equipment allows sampling of emissions to be done on a composite basis for the whole test as opposed to sampling emissions mode-by-mode. The RMC versions of these tests simply create a negligible transition period 20 seconds long connecting each mode and collects emissions during these brief transitions, as well as collecting emissions during the running of each test's discrete operating modes. The continuous emission sampling allows regeneration events from engine emission control hardware to be captured more reliably and repeatably. By running emission testing without breaks and over the same engine duty schedule for each repetition of a RMC test, regeneration within the engine's emission control hardware should become almost a predictable event. The longer sampling times of RMCs, while creating an identical weighting of each mode's emissions, also help to avoid collecting a minuscule, possibly unreliably measured, amount of sample over the course of any single operating mode. PM emissions, for example, can be collected and measured more precisely under these test conditions as either batch or continuous samples. The opportunities for loss of emissions during sampling and storage due to sample retention by equipment at shut-down between modes or by filter handling and weighing are greatly reduced. As well, running a ''steady-state'' test on a continuous basis allows cycle performance statistics to be applied to RMC emission tests (see 40 CFR, part 39). Manufacturers are familiar with test cycles run with a set of statistical engine duty cycle performance ''targets''. Further, their test runs will be subject to less test cell ''tuning'', modifying control strategies using repeat testing runs to fit the emission test cycle and the dynamometer to operate a particular engine. Finally, statistical targets serve to increase repeatability and reduce variability of engine operating parameters and emission test results on a test-to-test basis.

Transport refrigeration unit (TRU) engines, a specific application of a steady-state operation engine (68 FR 28485, May 23, 2003), will be subject to both steady-state and NTE standards based on any normal operation that these engines would experience in the field. To that end, EPA has adopted a four-mode steady-state test cycle designed specifically for engines used in TRU applications which may be used by the manufacturer in lieu of normal steady-state testing. Commenters to the rule agreed that a TRU test cycle would be more representative of refrigeration unit operation than the nonroad cycles currently available to manufacturers of TRU engines, but some took issue with EPA's usage restrictions in paragraphs (d)(2), (e)(2), and (e)(3) of regulations proposed at 40 CFR part 1039 subpart G. In response, the final rule allows manufacturers to test their engines under a broad definition of intermediate test speed. The definition covers the 60–75% range of engine rpm at the specified test cycle engine load points, as defined in 40 CFR, 89.2. This will enable an engine manufacturer to more closely match the TRU cycle to the operation of their engines in-use. Further, the engine is allowed to exhibit no more than 2% variation in transient operation (speed or torque change) around the four operating modes defined under this test cycle. The provisions to address load set point drift are discussed in detail in the RIA chapter 4.3.2 and in regulations at 40 CFR part 1039 subpart G.

In choosing to certify their engine as a TRU engine, manufacturers will need to state on the engine emission control label that the engine will only be used in a TRU application and records must be kept on the delivery destination(s) for their engines. Manufacturers of these engines may petition EPA at certification for a waiver of the requirement to provide smoke emission

[82] Letter from EMA (Engine Manufacturers Association) to EPA Air Docket A–2001–28, IV–D–402, pp 64.

[83] Memorandum and summary of technical discussions (including Appendix ''A'' text) in the e-Docket submission, OAR–2003–0012–0028, to EPA's Air Docket.

data for their constant-torque engines. A more detailed discussion of the TRU associated provisions is contained in chapter 4.2 of the RIA. It should be noted that an RMC version of the steady state TRU duty cycle is provided in Table 2 of 40 CFR part 1039 subpart G.

G. Other Test Procedure Issues

This section contains further detail and explanation regarding several related nonroad diesel engine emissions test and measurement provisions. The test procedures are specified in 40 CFR part 1065 and part 1039 subpart F. Part 1065 contains general test procedure requirements and part 1039 contains the provisions that are specific to CI nonroad engines, such as test cycles. The changes described here will not significantly affect the stringency of the standards. While some of the changes being made may appear to increase the stringency of the standards when considered by themselves, others would appear to have the opposite effect. When considered together, however, they will result in more repeatable and less subjective testing that is equivalent to the existing procedures with respect to stringency.

1. Smoke Testing

To control smoke emissions, we are requiring in this final rule that the current smoke standards and procedures will continue to apply to certain engines. We proposed to change these smoke standards and procedures, based on recent developments toward an established international protocol that was designed to allow a straightforward method to test engines in the field (68 FR 28486, May 23, 2003). We have chosen not to adopt the proposed approach, mainly because it is becoming increasingly clear that ongoing development of in-use testing equipment will allow direct measurement of PM emissions in the field. We believe this will provide the best long-term control of both PM emissions. Controlling smoke is in some ways independent of PM, but the interest in developing an in-use smoke test was primarily as a means of providing a secondary indicator of high in-use PM emissions from these engines. Direct PM measurement removes much of the advantage of in-use smoke measurements. Relying on the existing smoke test also addresses concerns raised by manufacturers that the effort to comply with the new smoke requirements would be a large testing and development burden with little air-quality benefit. We believe that aftertreatment-based Tier 4 PM standards will control smoke emissions as well as improved smoke testing standards and procedures. Engines below 19 kilowatts (kW) will generally not have particulate filters, but most of these are constant-speed engines and are therefore not subject to smoke standards, as described below.

We are continuing the established policy of exempting constant-speed engines and single-cylinder engines from smoke standards. We do not believe that constant-speed engines undergo the kind of acceleration or lugging events that occur during this smoke test procedure, so it would not be appropriate for these engines to be subject to smoke standards. We exempt single-cylinder engines for a different reason. These engines, which very often provide power for generator sets and other constant-speed applications, but may in some cases experience accelerations, the nature of single-cylinder engine operation makes it difficult to get a valid smoke emission measurement. Single-cylinder engines generally have discrete puffs of smoke, rather than a stable emission stream for measuring smoke values. We believe it is not appropriate to use such erratic measurements to evaluate an engine's emission performance. As a result, we will not require single-cylinder engines to meet our smoke standards until we find a test method that takes this into account.

Also, as described in the proposed rule, we are exempting from smoke emission standards any engines that are certified to PM emission standards or FELs at or below 0.07 g/kW-hr. We believe any engine that has such low PM emissions will have inherently low smoke emissions. No commenters disagreed with this position.

2. Maximum Test Speed

We are changing how test cycles are specified. As proposed, we are applying the existing definition of maximum test speed in 40 CFR part 1065 to nonroad CI engines. This definition of maximum test speed is the single point on an engine's normalized maximum power versus speed curve that lies farthest away from the zero-power, zero-speed point. This is intended to ensure that the maximum speed of the test is representative of actual engine operating characteristics and is not improperly used to influence the parameters under which their engines are certified. In establishing this definition of maximum test speed, it was our intent to specify the highest speed at which the engine is likely to be operated in use. Under normal circumstances this maximum test speed should be close to the speed at which peak power is achieved. However, in past discussions, some manufacturers have indicated that it is possible for the maximum test speed to be unrepresentative of in-use operation. Since we were aware of this potential during the original development of this definition, we included provisions to address issues such as these. Part 1065 allows EPA to modify test procedures in situations where the specified test procedures would otherwise be unrepresentative of in-use operation. Thus, in cases in which the definition of maximum test speed resulted in an engine speed that was not expected to occur with in-use engines, we would work with the manufacturers to determine the maximum speed that would be expected to occur in-use (see regulations at 40 CFR 1065.10 (c)).

3. Improvements to the Test Procedures

As we proposed, we are making changes to the test procedures to improve the precision of emission measurements. These changes address the potential effect of measurement precision on the feasibility of the standards. It is important to note that these changes are not intended to bias results high or low, but only to improve the precision of the measurements. Based on our experience with these modified test procedures, and our discussions with manufacturers about their experiences, we are confident that these changes will not affect the stringency of the standards. These changes are summarized briefly here. The rationale for the changes are discussed in detail elsewhere. The changes affecting Constant Volume Sampling (CVS) and PM testing are discussed in a memo to the docket (Air Docket A–99–06, IV–B–11), which was originally submitted in support of the recent highway heavy-duty diesel engine rule (66 FR 5001, January 18, 2001).

In general, we are applying the highway heavy-duty engine test procedures to nonroad CI engines in this rulemaking. Many of the specific changes being adopted are to the PM sampling procedures. The PM procedures are the procedures finalized as part of the highway heavy-duty diesel engine rule (66 FR 5001, January 18, 2001). These include changes to the type of PM filters that are used and improvements in how PM filters are weighed before and after emission measurements, including requirements for more precise microbalances.

It is also worth noting that we intend to make additional improvements to the test procedures in a separate rulemaking that will be proposed later this year to incorporate the latest measurement

technologies. Many of the improvements being considered were discussed in the previously-mentioned memo to the docket (Air Docket A–99–06, IV–B–11). We recognize the importance of these improvements for use in testing by nonroad diesel engine manufacturers and EPA. However, since we expect that the changes would also apply to many nonroad spark-ignition engine manufacturers, it is appropriate to conduct a separate notice and comment rulemaking for all affected parties. We remain committed to incorporating appropriate additional improvements to the test procedures. We have placed into the docket a draft revised version of part 1065 that represents our current thinking on appropriate testing regulations.

H. Engine Power

Currently, rated power and power rating are undefined, and we are concerned that this makes the applicability of the standards too subjective and confusing. One manufacturer may choose to define rated power as the maximum measured power output, while another may define it as the maximum measured power at a specific engine speed. Using this second approach, an engine's rated power may be somewhat less than the true maximum power output of the engine. Given the importance of engine power in defining which standards an engine must meet and when, we believe that it is critical that a singular power value be determined objectively according to a specific regulatory definition.

To address this, we proposed to add a definition of ''maximum engine power'' to the regulations. This term was to be used instead of previously undefined terms such as ''rated power'' or ''power rating'' to specify the applicability of the standards. The addition of this definition was intended to allow for more objective applicability of the standards. More specifically, we proposed that:

> Maximum engine power means the measured maximum brake power output of an engine. The maximum engine power of an engine configuration is the average maximum engine power of the engines within the configuration. The maximum engine power of an engine family is the highest maximum engine power of the engines within the family.

During the comment period, manufacturers opposed the proposed definition. (We received no other comments on this issue.) The manufacturers correctly pointed out that they cannot know the average actual power of production engines when they certify an engine family, because certification typically occurs before production begins. Therefore the definition of ''maximum engine power'' being finalized today relies primarily upon the manufacturer's design specifications and the maximum torque curve that the manufacturer expects to represent the actual production engines. This provision is specified in a new section 40 CFR 1039.140. Under this approach the manufacturer would take the torque curve that is projected for an engine configuration, based on the manufacturer's design and production specifications, and convert it into a ''nominal power curve'' that would relate the maximum power that would be expected to engine speed when a production engine is mapped according our specified mapping procedures. The maximum engine power is being defined as the maximum power point on that nominal power curve.

Manufacturers will be required to report the maximum engine power of each configuration in their applications for certification. As with other engine parameters, manufacturers will be required to ensure that the engines that they produce under the certificate have maximum engine power consistent with those described in their applications. However, since we recognize that variability is a normal part of engine production, we will not require that all production engines have exactly the power specified in the application. Instead, we will only require that the power specified in the application be within the normal range of powers of the production engines. Typically, we would expect the specified power to be within one standard deviation of the mean power of the production engines. If a manufacturer determines that the specified power is outside of the normal range, we may require the manufacturer to change the settings of the engines being produced and/or amend the application for certification. In deciding whether to require such amendment, we would consider the degree to which the specified power differed from the production engines, the normal power variability for those engines, whether the engine used or generated emission credits, and whether the error affected which standards applied to the engine.

The preceding discussion presumes that each manufacturer will develop its production processes to produce the engines described in the application. If a manufacturer were to intentionally produce engines different than those described in the application, we would consider the application to be fraudulent, and could void the certificate *ab initio* for those engines. For example, for engines that use emission credits, this could occur if a manufacturer deliberately biased its production variability so that the engines have higher average power than described in the application. If we voided the certificate for those engines the manufacturer would be subject to large fines and any other appropriate enforcement provisions for each engine.

Finally, in light of some of the comments that we received, it is worth clarifying that the maximum engine power will not be used during engine testing. It is only used to define power categories and calculate ABT emission credits.

I. Auxiliary Emission Control Devices and Defeat Devices

Existing nonroad regulations prohibit the use of a defeat device (see 40 CFR 89.107) in nonroad diesel engines. The defeat device prohibition is intended to ensure that engine manufacturers do not use auxiliary emission control devices (AECD) which sense engine operation in a regulatory test procedure and as a result reduce the emission control effectiveness of that procedure.[84] In today's notice we are supplementing existing nonroad test procedures with a transient engine test cycle and NTE emission standards with associated test requirements. As such, the Agency believes that a clarification of the existing nonroad diesel engine regulations regarding defeat devices is required in light of these additional emission test requirements. The defeat device prohibition makes it clear that AECDs which reduce the effectiveness of the emission control system are defeat devices, unless one of several conditions is met. One of these conditions is that an AECD which operates under conditions ''included in the test procedure'' is not a defeat device.[85] While the existing defeat device definition does contain the term ''test procedure,'' and therefore should be interpreted as including the supplemental testing requirements, we want to make it clear that both the supplemental transient test cycle and NTE emission test procedures are

[84] Auxiliary emission control device is defined at 40 CFR 89.2 as ''any element of design that senses temperature, vehicle speed, engine RPM, transmission gear, or any other parameter for the purpose of activating, modulating, delaying or deactivating the operation of any part of the emission control system.''

[85] 40 CFR 89.107(b)(1) states ''Defeat device includes any auxiliary emission control device (AECD) that reduces the effectiveness of the emission control system under conditions which may reasonably be expected to be encountered in normal operation and use unless such conditions are included in the test procedure.''

included within the defeat device regulations as conditions under which an operational AECD will not be considered a defeat device. Therefore, we are clarifying the defeat device regulations by specifying the appropriate test procedures (*i.e.*, the existing steady-state procedures and the supplemental tests). We are clarifying the engine manufacturers certification reporting requirements with respect to the description of AECDs. Under the previous nonroad engine regulations, manufacturers are required to provide a generalized description of how the emissions control system operates and a ''detailed'' description of each AECD installed on the engine (see 40 CFR 89.115(d)(2)). This change clarifies what is meant by ''detailed.''

For engines rated above 750 horsepower, the expanded interpretation of ''included in the test cycle'' extends only to the NTE because we are not requiring these engine to be tested over the supplemental transient test cycle. Transient emissions control strategies that are substantially included in the NTE will be considered to comply with the defeat device criteria. For instances where transient emissions control strategies are not well represented over the official test requirements, we will rely on the defeat device provisions to ensure appropriate transient off-cycle emissions control. The defeat device provisions restrict the ability of manufacturers to reduce the level of emissions control during transient operation compared to that employed over the steady state cycle. In order to evaluate transient emissions control strategies for compliance with the defeat device provisions, we are requiring manufacturers to submit information which indicates how transient emissions are controlled during normal operation and use. Information that would adequately fulfill this requirement includes but is not limited to:

A. Emissions data gathered with portable emissions measurement systems from in-service engines operating over a broad range of typical transient conditions;

B. Emissions data generated under laboratory conditions representing a broad range of typical transient operation;

C. Transient test cycle results from certified engines rated at or below 750 horsepower which share nearly identical transient emissions control strategies;

D. Base emissions control maps along with an explanation for differences in control between portions of the map substantially included in the steady-state test cycle and that which is predominately associated with transient operation;[86]

E. A comparative analysis of the base emissions control maps from certified engines rated at or below 750 horsepower and those rated over 750 horsepower.

We will use this information to determine the degree to which the design and effectiveness of the transient emissions control system compares to the control demonstrated over the steady-state cycle as well as the transient control used for certified engines at or below 750 horsepower where compliance over the transient cycle is required.

A thorough disclosure of the presence and purpose of AECDs is essential in allowing EPA to evaluate the AECD and determine whether it represents a defeat device. Clearly, any AECD which is not fully identified in the manufacturer's application for certification cannot be appropriately evaluated by EPA and therefore cannot be determined to be acceptable by EPA. Our clarifications to the certification application requirements include additional detail specific to those AECDs which the manufacturer believes are necessary to protect the engine or the equipment in which it is installed against damage or accident (''engine protection'' AECDs). While the definition of a defeat device allows as an exception strategies needed to protect the engine and equipment against damage or accident, we intend to continue our policy of closely reviewing the use of this exception. In evaluating whether a reduction in emissions control effectiveness is needed for engine protection, EPA will closely evaluate the actual technology employed on the engine family, as well as the use and availability of other emission control technologies across the industry, taking into consideration how widespread the use is, including its use in similar engines and similar equipment. While we have specified additional information related to engine protection AECDs in the regulations, we reserve the right to request additional information on a case-by-case basis as necessary.

In the last several years, EPA has issued extensive guidance on the disclosure of AECDs for both highway and nonroad diesel engine manufactures. These provisions do not impose any new certification burden on engine manufacturers, rather, it clarifies the existing certification application regulations by specifying what type of information manufacturers must submit regarding AECDs.

Finally, we take this opportunity to emphasize that the information submitted must be specific to each engine family. The practice of describing AECDs in a ''common'' section, wherein the strategies are described in general for all the manufacturer's engines, is acceptable as long as each engine family's application contains specific references to the AECDs in the common section which clearly indicate which AECDs are present on that engine family, and the application contains specific calibration information for that engine family's AECDs. The regulatory requirements can be found at 40 CFR 89.115(d)(2) in today's notice.

J. Not-To-Exceed Requirements

In today's action we are finalizing not-to-exceed (NTE) emission standards for all new nonroad diesel engines subject to the Tier 4 emissions standards beginning in 2011. These NTE standards and requirements are largely identical to the NTE provisions we proposed, except as noted below.

The NTE standards and test procedures are being finalized to help ensure that nonroad diesel emissions are controlled over the wide range of speed and load combinations commonly experienced in-use. EPA has similar NTE standards for highway heavy-duty diesel engines, compression ignition marine engines, and nonroad spark-ignition engines. The NTE requirements supplement the existing steady-state test as well as the new transient test which is also being finalized today.

The NTE standards and test procedures which we proposed, and which we are finalizing, are derived from similar NTE standards and test procedures which EPA adopted for highway heavy-duty diesel engines. In the proposal, we requested comment on an alternative NTE test procedure approach (see 68 FR 28369, May 23, 2003). As discussed in the proposal, the two NTE approaches would result in the same overall level of emission control, but the implementation of each approach from an in-use measurement and data gathering perspective are quite different. We have decided not to finalize this alternative approach. This decision is based primarily on our belief that nonroad engine manufacturers will more easily transfer the knowledge and experience gained from the highway NTE implementation (which begins in 2007) to the nonroad program if the two programs have similar requirements. For additional discussion regarding our

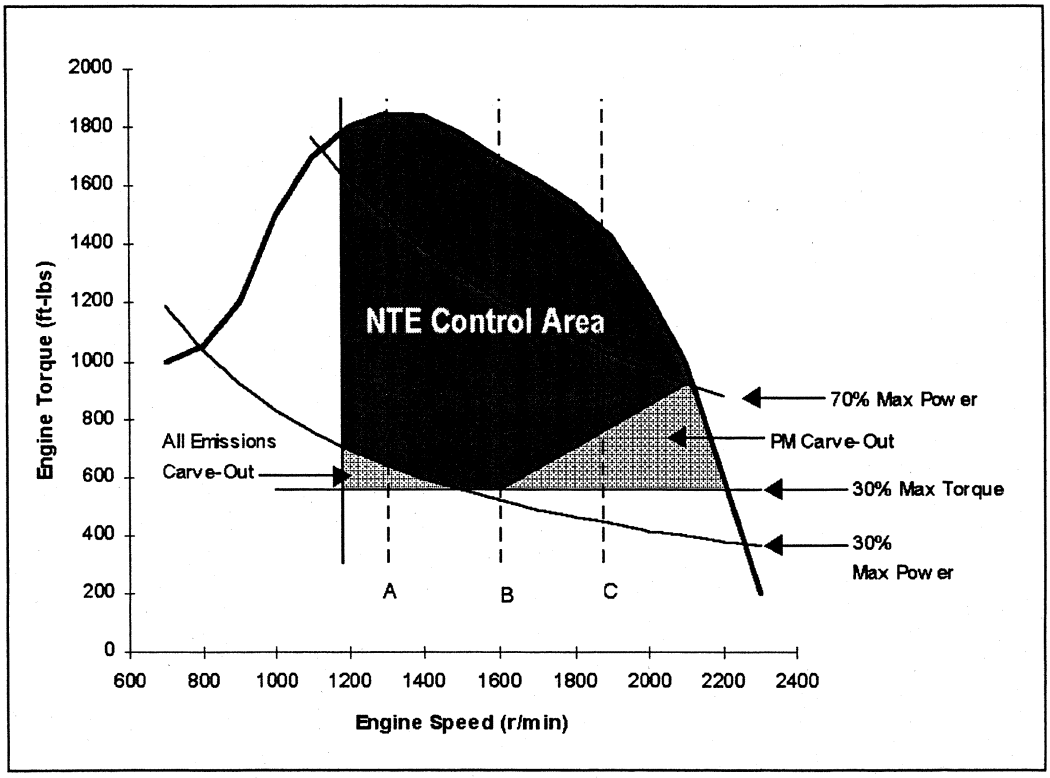
[86] Base emissions control maps describe the modulation of an emissions control parameter as a function of changing engine speed and torque.

decision to not finalize the alternative approach, please see the Summary and Analysis of Comments.

The NTE requirements establish an area (the ''NTE zone'' or ''NTE control area'') under the torque curve of an engine where emissions must not exceed a specified value for any of the regulated pollutants.[87] An illustrative NTE zone is shown in Figure III.J–1.

Figure III.J-1: Example NTE Control Area

Note: PM Carve-Out region only applies for engines with a PM standard or FEL greater than or equal to 0.05 g/bhp-hr



The NTE standard applies during any conditions that could reasonably be expected to be seen by that engine in normal operation and use, within certain broad ranges of real ambient conditions. The NTE requirements will help to ensure emission benefits over the full range of in-use operating conditions. The NTE being finalized today for nonroad contains the same basic provisions as the highway NTE. This NTE control area is defined in the same manner as the highway NTE control area, and is therefore a subset of the engine's possible speed and load operating range. The NTE standard applies to emissions sampled during a time duration as small as 30 seconds. The NTE standard requirements for nonroad diesel engines are summarized below and specified in the regulations at 40 CFR 1039.101 and 40 CFR 1039.515. These requirements will take effect as early as 2011, as shown in table III.J–1. The NTE standard applies to engines at the time of certification as well as in use throughout the useful life of the engine.

TABLE III.J–1.—NTE STANDARD IMPLEMENTATION SCHEDULE

Power category	NTE implementation model year[a]
<25 hp	2013
25–75 hp	2013[b]
75–175 hp	2012
175–750 hp	2011
>750 hp	2011

Notes:

[a] The NTE applies for each power category once Tier 4 standards are implemented, such that all engines in a given power category are required to meet NTE standards.

[b] The NTE standard would apply in 2012 for any engines in the 50–75 hp range which choose not to comply with the proposed 2008 transitional PM standard.

The NTE test procedure can be run in nonroad equipment during field operation or in an emissions testing laboratory using an appropriate dynamometer. The test itself does not involve a specific operating cycle of any specific length; rather, it involves nonroad equipment operation of any type which could reasonably be expected to occur in normal nonroad equipment operation that could occur within the bounds of the NTE control area. The nonroad engine is operated under conditions that may reasonably be expected to be encountered in normal operation and use, including operation under steady-state or transient conditions and under varying ambient conditions. Emissions are averaged over a minimum time of thirty seconds and then compared to the applicable emission standard. The NTE standard applies over a wide range of ambient conditions, including up to an altitude

[87] Torque is a measure of rotational force. The torque curve for an engine is determined by an engine ''mapping'' procedure specified in the Code of Federal Regulations. The intent of the mapping procedure is to determine the maximum available torque at all engine speeds. The torque curve is merely a graphical representation of the maximum torque across all engine speeds.

of 5,500 feet above-sea level at ambient temperatures as high as 86 deg. F, and at sea-level up to ambient temperatures as high as 100 deg. F. The specific temperature and altitude conditions under which the NTE applies, as well as the methodology for correcting emissions results for temperature and/or humidity, are specified in the regulations.

For new nonroad diesel engines subject to the NTE standards, we will require that manufacturers state in their application for certification that they are able to meet the NTE standards under all conditions that may reasonably be expected to occur in normal equipment operation and use. Manufacturers will have to maintain a detailed description of any testing, engineering analysis, and other information that forms the basis for their statement. We believe that there is a variety of information that a manufacturer could use as a reasonable basis for a statement that engines are expected to meet NTE standards. For example, a reasonable basis could include data from laboratory steady-state and transient test cycle operation, a robust engine emissions map derived from laboratory testing (*e.g.*, an emissions map of similar resolution to the engine's base fuel injection timing map) and technical analysis relying on good engineering judgment which are sufficient, in combination, to project emissions levels under NTE conditions reasonably expected to be encountered in normal operation and use. Data generated from in-use nonroad equipment testing to determine emission levels could, at the manufacturer's option, also be part of this combination. However, a reasonable basis for the manufacturer's statement does not require in-use emissions test data. This statement could reasonably be based solely on laboratory test data, analysis, and other information reasonably sufficient to support a conclusion that the engine will meet the NTE under conditions reasonably expected to be encountered in normal vehicle operation and use. If a manufacturer has relevant in-use nonroad emissions test data, it should be taken into consideration by the manufacturer in developing the basis for its statement.

In addition, as we proposed, we are finalizing a transition period during which a manufacturer could apply for an NTE deficiency for a nonroad diesel engine family. The NTE deficiency provisions would allow the Administrator to accept a nonroad diesel engine as compliant with the NTE standards even though some specific requirements are not fully met. We are finalizing these NTE deficiency provisions because we believe that, despite the best efforts of manufacturers, for the first few model years it is possible some manufacturers may have technical problems that are limited in nature but cannot be remedied in time to meet production schedules. We are not limiting the number of NTE deficiencies a manufacturer can apply for during the first three model years for which the NTE applies. For the fourth through the seventh model year after which the NTE standards are implemented, a manufacturer could apply for no more than three NTE deficiencies per engine family. Within an engine family, NTE deficiencies must be applied for on an engine model or power rating basis; however, the same deficiency when applied to multiple ratings or models counts as a single deficiency within an engine family. No deficiency may be applied for or granted after the seventh model year. The NTE deficiency provision will only be considered for failures to meet the NTE requirements. EPA will not consider an application for a deficiency for failure to meet the FTP or supplemental transient standards.

Similar to the 2007 highway HD rule, we are also finalizing a provision which would allow a manufacturer to exclude defined regions of the NTE engine control zone from NTE compliance if the manufacturer could demonstrate that the engine, when installed in a specified nonroad equipment application(s), is not capable of operating in such regions. We have also finalized a provision which would allow a manufacturer to petition the Agency to limit testing in a defined region of the NTE engine control zone during NTE testing. This optional provision would require the manufacturer to provide the Agency with in-use operation data which the manufacturer could use to define a single, continuous region of the NTE control zone. This single area of the control zone must be specified such that operation within the defined region accounts for 5 percent or less of the total in-use operation of the engine, based on the supplied data. Further, to protect against ''gaming'' by manufacturers, the defined region must generally be elliptical or rectangular in shape, and share a boundary with the NTE control zone. If approved by EPA, the regulations then disallow testing with sampling periods in which operation within the defined region constitutes more than 5.0 percent of the time-weighted operation within the sampling period.

The NTE numerical standard is a function of FTP emission standards contained in today's final rule, which standards are described in section II. As with the NTE standards we have established for the 2007 highway rule, the nonroad NTE standard is determined as a multiple of the engine families' underlying FTP emission standard. In addition, as with the 2007 highway standard, the multiple is either 1.25 or 1.5, depending on the emission pollutant type and the value of the FTP standard (or the engine families' FEL). These multipliers are based on EPA's assessment of the technological feasibility of the NTE standard, and our assessment that as the underlying FTP standard becomes more stringent, the NTE multiplier should increase (from 1.25 to 1.5). The FTP standard or FEL thresholds for the NTE standard's 1.25x multiplier and the 1.5x multiplier are specified for each regulated emission in table III.J–2.

TABLE III.J–2.—THRESHOLDS FOR APPLYING NTE STANDARD OF 1.25X FTP STANDARD VS. 1.5X FTP STANDARD

Emission	Apply 1.25x NTE when . . .	Apply 1.5x when . . .
NO_X	NO_X std or FEL ≥ 1.9 g/bhp-hr	NO_X std or FEL < 1.9 g/bhp-hr
NMHC	NO_X std or FEL ≥ 1.9 g/bhp-hr	NO_X std or FEL < 1.9 g/bhp-hr
NO_X+NMHC	NMHC+NO_X std or FEL ≥ 2.0 g/bhp-hr	NMHC+NO_X std or FEL < 2.0 g/bhp-hr
PM	PM std or FEL ≥ 0.05 g/bhp-hr	PM std or FEL < 0.05 g/bhp-hr
CO	All stds or FELs	No stds or FELs

For example, beginning in 2011, the NTE standard for engines meeting a FTP PM standard of 0.01 g/bhp-hr and a FTP NO_X standard of 0.30 g/bhp-hr would be 0.02 g/bhp-hr PM and 0.45 g/bhp-hr NO_X. In the NPRM, we proposed a NO_X

threshold value of 1.5 g/bhp-hr as the value at which the NTE multiplier would switch from 1.5 to 1.25.

We proposed this NO_X emission threshold level (1.5 g/bhp-hr) primarily because it is the same value as we finalized for the highway NTE. As shown in table III.J–2, we have finalized a threshold value of 1.9 g/bhp-hr NO_X for nonroad engines. We have finalized this higher NO_X threshold based on the differences in the emission performance of NO_X control technologies between highway and nonroad diesel engines. Specifically, nonroad diesel NO_X standards have traditionally been higher than the equivalent highway NO_X standard due primarily to the effectiveness of charge-air-cooling and the lack of ram-air for nonroad applications. For example, the nonroad Tier 3 NMHC+NO_X standards are higher than the 2004 heavy-duty highway standards (*e.g.*, 3.0 g/bhp-hr vs. 2.5 g/bhp-hr), and the Tier 4 NO_X standard is higher than the 2007 heavy-duty highway standard (*e.g.*, 0.3 g/bhp-hr vs. 0.2 g/bhp-hr). We expect that the nonroad Tier 3 standard for engines above 100 hp will require NO_X levels of approximately 2.5 g/bhp-hr and we expect that for the 2004 highway heavy-duty standards, NO_X levels are approximately 2 g/bhp-hr. In both cases, these emission levels are the building blocks for the next set of EPA standards (*e.g.*, Tier 4 for nonroad and 2007 for highway). Because the nonroad Tier 3 NO_X emission levels are expected to be approximately 25 percent greater than the 2004 highway level (2.5 vs 2), we believe that the NTE NO_X multiplier threshold for nonroad should be 25 percent greater for nonroad as compared to highway. For these reasons, we have finalized a NO_X multiplier threshold of 1.9 g/bhp-hr, which is 25 percent greater than the highway multiplier threshold.

In addition, as proposed, we are finalizing a number of specific engine operating conditions during which the nonroad NTE standard would not apply. The exact criteria for these conditions are defined in the regulations, but in summary: the NTE does not apply during engine start-up conditions; the NTE does not apply during very cold engine intake air temperatures for EGR-equipped engines during which the engine may require an engine protection strategy; and, finally, for engines equipped with NO_X and/or NMHC aftertreatment (such as a NO_X adsorber), the NTE does not apply during warm-up conditions for the exhaust emission control device. Finally, while we did not propose this, we are finalizing the NTE PM carve-out provisions for engines which will not require PM filters. The PM only carve-out is a sub-region of the NTE zone in which the NTE PM standard does not apply. Figure III.J–1 contains an illustration of the PM carve-out. This is a region of high engine speed and low engine torque during which engine-out PM emissions are difficult to control to levels below the PM NTE standard. The dimensions of the PM carve-out are specified in the regulations. For engines equipped with a PM filter, compliance with the PM NTE standard in this region is achievable due to the highly efficient PM reduction capabilities of the CDPF technology. However, for engines in the under 25 hp category, for which we have established Tier 4 emission standards that do not require the use of a PM filter, PM control in this sub-region of the NTE zone with conventional PM reduction technologies may not be achievable. Therefore, as we allowed with highway heavy-duty engines certifying to the 0.1 g/bhp-hr standard, we have created a PM carve-out for nonroad engines that use in-cylinder PM control technologies. Specifically, the PM carve-out applies to engines meeting a PM standard or FEL greater than or equal to 0.05 g/bhp-hr.

K. Investigating and Reporting Emission-Related Defects

In 40 CFR part 1068, subpart F, we are adopting defect reporting requirements that obligate manufacturers to tell us when they learn that emission-control systems are defective and to conduct investigations under certain circumstances to determine if an emission-related defect is present. Under these defect-reporting requirements, manufacturers must track available warranty claims and any other available information from dealers, hotlines, diagnostic reports, or field-service personnel to identify possible defects. If the number of possible defects exceeds certain thresholds, they must investigate future warranty claims and other information to establish whether these are actual defects.

We believe the investigation requirement in this rule will allow both EPA and the engine manufacturers to fully understand the significance of any unusually high rates of warranty claims for systems or parts that may have an impact on emissions. In the past, defect reports were submitted based on a very low threshold with the same threshold applicable to all size engine families and with little information about the full extent of the problem. The new approach should result in fewer overall defect reports being submitted by manufacturers than would otherwise be required under the old defect-reporting requirements because the number of defects triggering the submission requirement rises with the engine family size. The new approach may trigger some additional reports for small-volume families, but the percentage-based approach will ensure that investigations and reports correspond to issues that are likely to be significant.

Part 1068, subpart F, is intended to require manufacturers to use information we would expect them to keep in the normal course of business. We believe in most cases manufacturers will not be required to institute new programs or activities to monitor product quality or performance. A manufacturer that does not keep warranty or replacement part information may ask for our approval to use an alternate defect-reporting methodology that is at least as effective in identifying and tracking possible emission-related defects as the requirements of 40 CFR 1068.501. Thus manufacturers will have the flexibility to develop defect tracking and reporting programs that work better for their standard business practices. However, until we approve such a request, the thresholds and procedures of subpart F continue to apply.

Manufacturers may also ask for our approval to use an alternate defect-reporting methodology when the requirements of 40 CFR 1068.501 can be demonstrated to be highly impractical or unduly burdensome. In such cases, we will generally allow alternate methodologies that are at least as effective in identifying, correcting, and informing EPA of possible emission-related defects as the requirements of 40 CFR 1068.501. We expect this flexibility to be useful in special circumstances such as when new models of very large engines are introduced for the first time. In this situation, it may be appropriate to allow an alternate defect reporting method because the high cost of these engines often makes it impractical to build and test large numbers of prototype engines. The initial production of these engines can have similar defect rates to the high levels often associated with prototype engines. While we are concerned about such defects and want to be kept informed about them, it is not clear that our basic program would be the best way to address these defects. In such cases, we believe it may be more appropriate for manufacturers to propose an alternative approach that consolidates reports on a regular interval, such as quarterly, and identifies obvious early-life defects without a formal tracking process. In general, we would encourage manufacturers to propose an alternate

approach to ensure that these defects are properly addressed while minimizing the associated burden.

Issues related to parts shipments received the most attention from commenters who pointed out that the proposed requirement to track shipments of all emission-related components was overly burdensome and not likely to reveal useful information. We have concluded that it is not appropriate to use parts shipments as a quantitative indicator to evaluate whether manufacturers exceed the threshold that would trigger an investigation. We generally agree with manufacturers concerns that parts-shipments data would be too difficult to evaluate, for example, because parts are often shipped for stocking purposes, parts are installed in compliant and noncompliant products (such as exported engines), and part shipments are generally not identifiable by model year. The final rule therefore requires manufacturers to pursue a defect investigation if the number of shipped parts is higher than the manufacturer would expect based on historical shipment levels, specifications for scheduled maintenance, or other factors.

We have modified the proposed thresholds to address concerns that manufacturers would be required to investigate and report defects too frequently. For engines under 750 hp, we are adopting investigation thresholds of 10 percent of total production or 50 engines, whichever is greater, for any single engine family in one model year. Similarly, we are adopting defect-reporting thresholds of 2 percent of total production or 20 engines, whichever is greater. For engines over 750 hp, the same percentage thresholds apply, but we are extending the percentage values down to smaller engine families to reflect their disproportionate contribution to total emissions. For these engines, the absolute thresholds are 25 engines for investigations and 10 or 15 engines for defects (see table III.K–1). We believe these thresholds adequately balance the desire to document emission-related defects without imposing an unreasonable reporting burden. Also, we believe this approach to adopting thresholds adequately addresses reporting requirements for aftertreatment and non-aftertreatment components.

TABLE III.K–1.—INVESTIGATION AND DEFECT-REPORTING THRESHOLDS FOR VARYING SIZES OF ENGINE FAMILIES[1]

Engine size	Investigation threshold	Defect-reporting threshold
≤750 hp	less than 500: 50	less than 1,000: 20
	500–50,000: 10%	1,000–50,000: 2%
	50,000+: 5,000	50,000+: 1,000
>750 hp		less than 150: 10
	less than 250: 25	150–750: 15
	250+: 10%	750+: 2%

Notes:
[1] For varying sizes of engine families, based on sales per family in a given model year.

EMA also expressed concern about the existing regulatory language in 40 CFR 1068.501(b)(3), which states that manufacturers must ''consider defects that occur within the useful life period, or within five years after the end of the model year, whichever is longer.'' However, this provision has no effect on the diesel engines subject to the Tier 4 standards being adopted today, since they all have useful lives of at least five years. We recognize that this issue may be relevant to engine categories that do not have five-year useful lives, such as small SI engines, and will consider these concerns in our future regulation of such engines.

When manufacturers start an investigation, they must consider any available information that would help them evaluate whether any of the possible defects that contributed to triggering the investigation threshold would lead them to conclude that these were actual defects. Otherwise, manufacturers are expected to look prospectively at any possible defects and attempt to determine whether these are actual defects. Also, during an investigation, manufacturers should use appropriate statistical methods to project defect rates if they are unable to collect information to evaluate possible defects, taking steps as necessary to prevent bias in sampled data (or making adjusted calculations to take into account any bias that may remain). For example, if 75 percent of the components replaced under warranty are available for evaluation, it would be appropriate to extrapolate known information on failure rates to the components that are unavailable for evaluation.

The second threshold in 40 CFR 1068.501 specifies when a manufacturer must report that there is an emission-related defect. This threshold involves a smaller number of engines because each possible occurrence has been screened to confirm that it is in fact an emission-related defect. In counting engines to compare with the defect-reporting threshold, the manufacturer generally considers a single engine family and model year. Where information cannot be differentiated by engine family and model year, the manufacturer must use good engineering judgment to evaluate whether the information leads to a conclusion that the number of defects exceeds the applicable thresholds. However, when a defect report is required, the manufacturer must report all occurrences of the same defect in all engine families and all model years.

If the number of engines with a specific defect is found to be less than the threshold for submitting a defect report, but information such as warranty data later indicates that there may be additional defective engines, all the information must be considered in determining whether the threshold for submitting a defect report has been met. If a manufacturer has actual knowledge from any source that the threshold for submitting a defect report has been met, a defect report must be submitted even if the trigger for investigating has not yet been met. For example, if manufacturers receive from their dealers, technical staff or other field personnel information showing conclusively that there is a recurring emission-related defect, they must submit a defect report.

If manufacturers trigger the threshold to start an investigation, they must promptly and thoroughly investigate whether their parts are defective, collecting specific information to prepare a report describing their conclusions. Manufacturers must send the report if an investigation concludes that the number of actual defects did not exceed reporting thresholds. Manufacturers must also send these as status reports twice annually during an investigation. After investigating for

several months, or perhaps a couple years, it may become clear that the problems that triggered the investigation will never show enough actual defects to trigger a defect report. In this case, the manufacturer would send us a report justifying this conclusion.

In general, we believe this updated approach to defect reporting will decrease the number of defect reports submitted by manufacturers overall while significantly improving their quality and their value to both EPA and the manufacturer.

Note that misbuilds are a special type of emission-related defect. An engine that is not built consistent with its application for certification violates the prohibited act of introducing into commerce engines that are not covered by a certificate of conformity.

L. Compliance With the Phase-In Provisions

In section II we described the NO_X and NMHC standards phase-in schedule, which is intended to allow engine manufacturers to phase-in their new advanced technology engines, while they phase-out existing engines. This phase-in requirement is based on percentages of a manufacturer's production for the U.S. market. We recognize, however, that manufacturers need to plan for compliance well in advance of the start of production, and that actual production volumes for any one model year may differ from their projections. On the other hand, we believe that it would be inappropriate and infeasible to base compliance solely on a manufacturer's projections. That could encourage manufacturers to overestimate their production of complying phase-in engines, and could result in significantly lower emission benefits during the phase-in. In response to these concerns, we proposed to initially only require nonroad diesel manufacturers to project compliance with the phase-in based on their projected production volumes, provided that they made up any deficits (in terms of percent of production) the following year. We received no comments on this issue and are finalizing it as proposed.

Because we expect that a manufacturer making a good-faith projection of sales would not be very far off of the actual production volumes, we are limiting the size of the deficit that would be allowed, as in the highway program. In all cases, the manufacturer would be required to produce at least 25% of its production in each phase-in power category as ''phase-in'' engines (meeting the NO_X and NMHC standards or demonstrating compliance through use of ABT credits) in the phase-in years (after factoring in any adjustments for early introduction engine credits; see section III.M). This minimum required production level would be 20% for the 75–175 hp category if a manufacturer exercises the option to comply with a reduced phase-in schedule in lieu of using banked Tier 2 ABT credits, as discussed in section III.A.1.b. Another important restriction is that manufacturers would not be allowed to have a deficit in the year immediately preceding the completion of the phase-in to 100%. This would help ensure that manufacturers are able to make up the deficit. Since they could not produce more than 100% low-NO_X engines after the final phase-in year, it would not be possible to make up a deficit from this year. These provisions are identical to those adopted in the highway HDDE program.

We are also finalizing the proposed ''split family'' allowance for the phase-in years. This provision, which is similar to a provision of the highway program, allows manufacturers to certify engine families to both the phase-in and phase-out standards. Manufacturers choosing this option must assign at the end of the model year specific numbers of engines to the phase-in and phase-out categories. All engines in the family must be labeled with the same NO_X and PM FELs, which apply for all compliance testing, and must meet all other requirements that apply to phase-in engines. Engines assigned to the phase-out category may generate emission credits relative to the phase-out standards.

M. Incentive Program for Early or Very Low Emission Engines

We believe that it is appropriate and beneficial to provide voluntary incentives for manufacturers to introduce engines emitting at very low levels early. Such inducements may help pave the way for greater and/or more cost effective emission reductions from future engines and vehicles. To encourage early introduction of low-emission engines, the proposal contained provisions to allow engine manufacturers to benefit from producing engines certified to the final (aftertreatment-based) Tier 4 standards prior to the 2011 model year, by being allowed to make fewer engines certified to these standards once the Tier 4 program takes effect, a concept that we are terming ''engine offsets'' to avoid confusion with ABT program credits. The number of offsets that could be generated would depend on the degree to which the engines are able to meet, or perform better than, the final Tier 4 standards. Commenters generally supported this approach, as long EPA ensures that compliance requirements for these engines are enforced.

However, one equipment manufacturer submitted comments suggesting that we should adopt a program that would provide incentives for equipment manufacturers to use the early Tier 4 engines in their equipment. For an early low-emission engine program to be successful, we agree that it is important to provide incentives to both the engine manufacturer and the equipment manufacturer, who may incur added cost to install and market the advanced engine in the equipment. As was pointed out in comments, the proposed program did not provide clear incentives to equipment manufacturers to use the (presumably more expensive) early low-emission engines. Therefore, we are adding such provisions. Section III.B.2.e describes these early Tier 4 engine incentive provisions under which equipment manufacturers can earn increased allowance flexibilities. Under those provisions, the engine manufacturer's incentive to produce the low-emitting engines will come from customers' demand for them, and from the fact that the engine manufacturer can earn ABT program credits for these engines in the same way as without these incentive provisions. If the equipment manufacturer does not wish to earn the increased allowance flexibilities, then the engine manufacturer would be allowed to use the provisions of the incentive program for early low-emission engines described below in this subsection, though to do so would require the forfeiture of any ABT credits earned by the subject engines, essentially to avoid double counting, as explained below. This engine manufacturer incentive program is being adopted as proposed, except for engines above 750 hp, for which the proposed program requires some adjustment to account for the approach we are taking to final standards.

As discussed in section II.A.4, the final rule does not phase in standards for engines above 750 hp as proposed, and instead adopts application-specific standards in 2011 and 2015. The 2011 standards are not based on advanced aftertreatment except for NO_X on engines above 1200 hp used in generator sets. To avoid overcomplication of the incentive program, which might discourage its use, we are not separating over and under 1200 hp generator set engines into separate groups for these provisions. Instead, any of these engines that meet the 2015 standards before 2015 can earn offsets. We are, however,

separating the generator set engines and non-generator set engines above 750 hp into separate groups, because we are deferring setting a NO_X standard for the latter that is based on use of advanced aftertreatment technology.

Table III.M–1 summarizes the requirements and available offsets for engine manufacturers in this program. As the purpose of the incentive is to encourage the introduction of clean technology engines earlier than required, we require that the emission standard levels actually be met, and met early, by qualifying engines to earn the early introduction offsets. The regulations specify that the standards must be met without the use of ABT credits and actual production of the engines must begin by September 1 preceding the first model year when the standards would otherwise be applicable. Also, to avoid double-counting, as explained in the proposal, the early engines can earn either the engine offsets or the ABT emission credit, but not both. Note that this is different than the approach taken in the early Tier 4 engine incentive program for equipment manufacturers described in section III.B.2.e, where incentives for both the engine manufacturer (ABT credits) and the equipment manufacturer (allowance flexibilities) are needed to ensure successful early introduction of clean engines. Because 15 ppm sulfur diesel fuel will be available on a widespread basis in time for 2007 (due to the requirements for on-highway heavy-duty engines), we are allowing engine manufacturers to begin certifying engines to the very low emission levels required to be eligible for this incentive program, beginning with the 2007 model year.

TABLE III.M–1.—PROGRAM FOR EARLY INTRODUCTION OF CLEAN ENGINES

Category	Engine group	Must meet [a]	Per-engine offset
Early	25–75 hp	0.02 g/bhp-hr PM	1.5-to-1
PM-only [b]	75–750 hp	0.01 g/bhp-hr PM	PM-only
	25–75 hp	0.02/3.5 g/bhp-hr PM/NMHC+NO_X.	
	75–750 hp	0.01/0.30/0.14 g/bhp-hr PM/NO_X/NMHC.	
	>750 hp generator set	0.02/0.50/0.14 g/bhp-hr PM/NO_X/NMHC	1.5–to–1
Early Engine [b]	>750 hp non-generator set	0.03/2.6/0.14 g/bhp-hr PM/NO_X/NMHC.	
Low NO_X Engine	>25 hp	as above for Early Engine, except must meet 0.15 g/bhp-hr NO_X standard.	2–to–1

Notes:

[a] All engines must also meet the Tier 4 crankcase emissions requirements. Engines must certify using all test and other requirements (such as NRTC and NTE) otherwise required for final Tier 4 standards.

[b] Offsets must be earned prior to the start of phase-in requirements in applicable engine groups (prior to 2013 for 25–75 hp engines, prior to 2012 for 75–175 hp engines, prior to 2011 for 175–750 hp engines, prior to 2015 for >750 hp engines).

For any engines being certified under this program before the 2011 model year using 15 ppm sulfur certification fuel, the manufacturer would have to meet the requirements described in section III.D, including demonstrating that the engine would indeed be fueled with 15 ppm sulfur fuel in the field. We expect this would occur through selling such engines into fleet applications, such as municipal maintenance fleets, large construction company fleets, or any such well-managed centrally-fueled fleet. While obtaining a reliable supply of 15 ppm maximum sulfur diesel fuel prior to the 2011 model year will be possible, it will require some effort by nonroad diesel machine operators. We therefore believe it is necessary and appropriate to provide a greater incentive for early introduction of clean diesel technology. Thus, as proposed, we would count one early engine (that is, an engine meeting the final Tier 4 standards) as offsetting 1.5 engines later. This means that fewer clean diesel engines than otherwise required may enter the market in later years, but, more importantly, it means that emission reductions would be realized earlier than under our base program. We believe that providing incentives for early emission reductions is a worthwhile goal for this program, because improving air quality is an urgent need in many parts of the country as explained in section I, and because the early learning opportunity with new technologies can help to ensure a smooth transition to Tier 4 standards.

We are providing this early introduction offset for engines over 25 hp that meet all of today's Tier 4 emissions standards (NO_X, PM, and NMHC) in the applicable engine category. We are also providing this early introduction offset to engines that pull ahead compliance with only the PM standard. However, a PM-only early engine would offset only the PM standard for an offset-using engine. For engines in power categories with a percentage phase-in, this would correspond (during the phase-in years) to offset use for ''phase-out'' engines (those required to meet the new Tier 4 standard for PM but not for NO_X or NMHC). Engines using the PM-only offset would be subject to the other applicable Tier 4 emission standards, including applicable transient and NTE standards (see Section III.F) and crankcase requirements. The applicable PM standard and requirements for these PM-only offset-using engines would be those of Tier 3 (Tier 2 for 25–50 hp engines). PM-only offsets would not offset engines required to meet other Tier 4 standards such as the phase-in NO_X and NMHC standards (since there is no reason for PM offsets to offset emissions of other pollutants). Tier 4 engines between 25 and 75 hp certified to the 2008 PM standard would not participate in this program, nor would engines below 25 hp, because they do not have advanced aftertreatment-based standards.

An important aspect of the early incentive provision is that it must be done on an engine count basis. That is, a diesel engine meeting new standards early would count as 1.5 such diesel engines later. This contrasts with a provision done on an engine percentage basis which would count one percent of diesel engines early as 1.5 percent of diesel engines later. Basing the incentive on an engine count alleviates any possible influence of fluctuations in engine sales in different model years.

Another important aspect of this program is that it is limited to engines sold prior to the 2013 model year for engines between 25 and 75 hp, prior to the 2012 model year for engines between 75 and 175 hp, and prior to the 2011 model year for engines between 175 and 750 hp. In other words, as in the highway program, nonroad diesel engines sold during the transitional ''phase-in'' model years would not be considered ''early'' introduction engines and would therefore be ineligible to

generate early introduction offsets. However, such engines and vehicles would still be able to generate ABT credits. Because the engines over 750 hp engines have no percent-of-production phase-in provisions, we are allowing offsets for early engines in any model year prior to 2015. For the same reason, there is no PM-only offset for these engines. As with the phase-in itself, and for the same reasons, an early introduction engine could only be used to offset requirements for engines in the same engine group (25–75 hp, 75–175 hp, 175–750 hp, >750 hp generator sets, and >750 hp non-generator sets) as the offset-generating engine.

As a further incentive to introduce clean engines and vehicles early, we are also adopting the proposed provision that gives engine manufacturers an early introduction offset equal to two engines during or after the phase-in years for engines with NO_X levels well below the final Tier 4 NO_X standard. This incentive applies for diesel engines achieving a 0.15 g/bhp-hr NO_X standard level (one-half of the aftertreatment-based standard for most engines) while also meeting the NMHC and PM standards. Due to the extremely low emission levels to which these engines and vehicles would need to certify, we believe that the double engine count offset is appropriate.

In the NPRM we asked for comment on whether or not we should extend the existing Blue Sky program that encourages the early introduction of engines with emission levels (as measured on a transient test) about 40% lower than the Tier 2 standards levels. See 68 FR at 28483. We received comments both for and against doing so, but no commenter provided substantive arguments or information. Given the very low emissions levels being adopted in Tier 4, we have decided not to extend the existing Blue Sky Series program, because it does not encourage engines emitting at such low emission levels.

N. Labeling and Notification Requirements

As explained in section II, the emissions standards will make it necessary for manufacturers to employ exhaust emission control devices that require very low-sulfur fuel (less than 15 ppm) to ensure proper operation. This action restricts the sulfur content of diesel fuel used in these engines. However, the 2008 emissions standards would be achievable with less sensitive technologies and thus it could be appropriate for those engines to use diesel fuel with up to 500 ppm sulfur. There could be situations in which vehicles requiring either 15 ppm fuel or 500 ppm may be accidentally or purposely misfueled with higher-sulfur fuel. Any of these misfueling events could seriously degrade the emission performance of sulfur-sensitive exhaust emission control devices, or perhaps destroy their functionality altogether.

In the highway rule, we adopted a requirement that heavy-duty vehicle manufacturers notify each purchaser that the vehicle must be fueled only with the applicable low-sulfur diesel fuel. We also required that diesel vehicles be equipped by the manufacturer with labels near the refueling inlet to indicate that low sulfur fuel is required. We are adopting similar requirements here.[88] Specifically, manufacturers will be required to notify each purchaser that the nonroad engine must be fueled only with the applicable low-sulfur diesel fuel, and ensure that the equipment is labeled near the refueling inlet to indicate that low sulfur fuel is required. We believe that these measures would help owners find and use the correct fuel and would be sufficient to address misfueling concerns. Thus, more costly provisions, such as fuel inlet restrictors, should not be necessary.

In general, beginning in model year 2011, nonroad engines will be required to use the Ultra Low Sulfur diesel fuel (with less than 15 ppm sulfur). Thus, the default label will state ''ULTRA LOW SULFUR FUEL ONLY.'' The labeling requirements for earlier model year Tier 4 engines are specified in § 1039.104(e). Some new labeling requirements for earlier model year Tier 3 engines are specified in 40 CFR 89.330(e). These requirements for earlier years generally require that engines and equipment be labeled consistent with the sulfur of the test fuel used for their certification. So where the engine is certified using Low Sulfur diesel fuel (with less than 500 ppm sulfur), the required label will state ''LOW SULFUR FUEL ONLY.'' See section III.D and the regulatory text for the other specific requirements related to labeling the earlier model years.

O. General Compliance

1. Good Engineering Judgment

The process of testing engines and preparing an application for certification requires the manufacturer to make a variety of judgments. This includes, for example, selecting test engines, operating engines between tests, and developing deterioration factors. EPA has the authority to evaluate whether a manufacturer's use of engineering judgment is reasonable. The regulations describe the methodology we use to address any concerns related to how manufacturers use good engineering judgment in cases where the manufacturer has such discretion (see 40 CFR 1068.5). If we find a problem with a manufacturer's use of engineering judgment, we will take into account the degree to which any error in judgment was deliberate or in bad faith. If manufacturers object to a decision we make under this provisions, they are entitled to a hearing. This subpart is consistent with provisions already adopted for light-duty highway vehicles, marine diesel engines, industrial spark-ignition engines, and recreational vehicles.

2. Replacement Engines

In the proposal we included a provision allowing manufacturers to sell a new, noncompliant engine intended to replace an engine that fails in service. The proposed language closely mirrored the existing provisions in 40 CFR 89.1003(b)(7), except that it specified that manufacturers could produce new, noncompliant replacement engines if no engine from any manufacturer were available with the appropriate physical or performance characteristics. Manufacturers objected to this provision and requested that the final regulations follow the language in 40 CFR part 89, in which the manufacturer of the new engine confirm that no appropriate engine is available from its product line (or that of the manufacturer of the original engine, if that were a different company). We agree that the language from 40 CFR part 89 is appropriate, but we note two things to address remaining concerns that manufacturers could potentially use the replacement-engine provisions to produce large numbers of noncompliant products. First, we are including a specific statement in the regulations that manufacturers may not use the replacement-engine exemption to circumvent the regulations. Second, we plan to use the data-collection provision under 40 CFR 1068.205(d) to ask manufacturers to report the number of engines they sell under the replacement-engine exemption. Rather than adopting a specific data-reporting requirement, we believe this more flexible approach is most appropriate to allow us to get information to evaluate how manufacturers are using the exemption without imposing reporting requirements that may involve more or less information than is actually needed.

[88] We also required that highway vehicles be labeled on the dashboard. Given the type of equipment using nonroad CI engines, we are not adopting any dashboard requirement here.

3. Warranty

We are modifying 40 CFR 1068.115 regarding engine manufacturers' warranty obligations by removing paragraph (b). This paragraph addresses specific circumstances under which manufacturers may not deny emission-related warranty claims, while paragraph (a) of this section addresses the circumstances under which manufacturers may deny such claims. As described in our Summary and Analysis of Comments related to our November 8, 2002 final rule (67 FR 68242), we intended to adopt 40 CFR1068.115 without this paragraph. We wanted to remove paragraph (b) because we agreed with a comment pointing out that publishing both paragraphs leaves ambiguous which provision applies if a situation applies that is not on either list. Since neither list can be comprehensive, we believe the provisions in paragraph (a) describing when manufacturers may deny warranty claims appropriately addresses the issue. As a result, paragraph (b) was inadvertently adopted as part of the November 2002 final rule.

4. Separate Catalyst Shipment

We are adopting provisions that will allow engine manufacturers to ship engines to equipment manufacturers where the engine manufacturer had not yet installed the aftertreatment or otherwise included it as part of the engine shipment. This allows the engine manufacturer to ship the engine without the aftertreatment; for example, in cases where it would be impractical to install aftertreatment devices on the engine before shipment or even ship products with the aftertreatment devices uninstalled along with the engine; or where shipping it already installed would require it to be disassembled and reinstalled when the engine was placed in the equipment. Today's final rule requires that the components be included in the price of the engine and that the engine manufacturer provide sufficiently detailed and clear instructions so that the equipment manufacturer can readily install the engine and its ancillary components in a configuration covered under the certificate of conformity held by the engine manufacturer. We are also requiring that the engine manufacturer have a contractual agreement obligating the equipment manufacturer to complete the final assembly into a certified configuration. The engine manufacturer must ship any components directly to the equipment manufacturer or arrange for their shipment from a component supplier. The engine manufacturer must tag the engines and keep records. The engine manufacturer must obtain annual affidavits from each equipment manufacturer as to the parts and part numbers that the equipment manufacturer installed on each engine and must conduct a limited number of audits of equipment manufacturers' facilities, procedures, and production records to monitor adherence to the instructions it provided. Where an equipment manufacturer is located outside of the U.S., the audits may be conducted at U.S. port of distribution facilities.

The rule also contains various provisions establishing responsibility for proper installation. Where the engines are not in a certified configuration when installed in nonroad equipment because the equipment manufacturer used improper emission-control devices or failed to install the shipped parts or failed to install the devices correctly, then both the engine manufacturer and the installer have responsibility. For the engine maker, the exemption is void for those engines that are not in their certified configuration after installation. We may also suspend or revoke the exemption for future engines where appropriate, or void the exemption for the entire engine family. The installer is also liable. We may find the equipment manufacturer to be in violation of the tampering prohibitions at 40 CFR 1068.101(b)(1) for the improper installation, which could subject it to substantial civil penalties. In any event, the engine manufacturer remains liable for the in-use compliance of the engine as installed. For example, it has responsibility for the emission-related warranty, including for the aftertreatment, and is responsible for any potential recall liability. However, if noncompliance of the in-use engines stems from improper installation of the aftertreatment, then the tampering that occurred by the installer may remove recall liability. Where the engine manufacturer had complied with the regulations and the failure was solely due to the equipment manufacturer's actions, we would not be inclined to revoke or suspend the exemption or to void the exemption for the entire engine family. We may deny the exemption for future model years if the engine manufacturer does not take action to address the factors causing the nonconformity. On the other hand, if the manufacturer failed to comply, had shipped improper parts, had provided instructions that led to improperly installed parts, or had otherwise contributed to the installation of engines in an uncertified configuration, we might suspend, revoke, or void the exemption for the engine family. In this case, the engine manufacturer would be subject to substantial civil penalties.

P. Other Issues

We are also making other minor changes to the compliance program. These changes are summarized in table III.Q–1 below. For more information about these changes, you should read the NPRM and Summary and Analysis of Comments for this rulemaking. We believe that these changes are straightforward and noncontroversial.

TABLE III.Q–1.—REGULATORY CHANGES

Issue	Regulatory provision
Applicability to alcohol-fueled engines	§§ 1039.101, 1039.107.
Prohibited controls	§ 1039.115.
Emission-related maintenance instructions	§ 1039.125.
Engine installation instructions	§ 1039.130.
Engines labels	§§ 1039.20, 1039.135, 1068.320.
Engine family definition	§ 1039.230.
Test engine selection	§ 1039.235.
Deterioration factors	§ 1039.240.
Engines that use noncommercial fuels	§ 1039.615.
Use of good engineering judgment	§ 1068.5.
Separate shipment of aftertreatment	§ 1068.260.
Exemptions	40 CFR 1068 Subpart C.
Importing engines	40 CFR 1068 Subpart D.

TABLE III.Q–1.—REGULATORY CHANGES—Continued

Issue	Regulatory provision
Hearings	40 CFR 1068 Subpart G.

Q. Highway Engines

We are changing the diesel engine/vehicle labeling requirements in 40 CFR 86.007–35 to be consistent with the new pump labels. This change corrects a mistake in the proposal that would have resulted in confusion for highway vehicle operators. (We received no comment on this issue.)

R. Changes That Affect Other Engine Categories

We are making some minor changes to the regulations in 40 CFR parts 1048 and 1051 for nonroad spark-ignition engines over 19 kW and recreational vehicles, respectively. We are also changing several additional provisions in 40 CFR parts 1065 and 1068, which define test procedures and compliance provisions for these same categories of engines. See the regulatory text for the specific changes. The proposed rule included most of these changes. To the extent there were comments on any of these changes, those issues are addressed elsewhere in this document or in the Summary and Analysis of Comments.

- In 40 CFR 1048.125 and 40 CFR 1051.125, we are correcting the provisions related to critical emission-related maintenance to allow manufacturers to do maintenance during service accumulation for durability testing, as long as their maintenance steps meet the specified criteria ensuring that in-use engines will undergo those maintenance procedures.
- In 40 CFR 1068.27, we clarify that manufacturers must make available a reasonable number of production-line engines so we can test or inspect them if we make such a request.
- We are changing the definition of nonroad engine to explicitly exclude aircraft engines. This is consistent with our longstanding interpretation of the Clean Air Act. Clarifying the definition this way allows us to more clearly specify the applicability of the fuel requirements to nonroad engines in this final rule.
- We are adding a provision directing equipment manufacturers to request duplicate labels from engine manufacturers and keep appropriate records if the original label is obscured in the final installation. The former approach under 40 CFR part 1068 was to require equipment manufacturers to make their own duplicate labels as needed. We intend to amend 40 CFR parts 1048 and 1051 to correspond with this change.
- As described above in section III, we are revising the criteria manufacturers would use to show that they may use the replacement-engine exemption under 40 CFR 1068.240. We also clarify that we may require manufacturers to report to us how many engines they sell in given year under the replacement-engine exemption.
- As described above and in the Summary and Analysis of Comments, we are adding a provision in 40 CFR 1068.260 to allow manufacturers to ship aftertreatment devices directly from the component supplier to the equipment manufacturer. This regulatory section includes several provisions to ensure that the equipment manufacturer installs the aftertreatment device in a way that brings the engine to its certified configuration.
- As described above, we are modifying the defect-reporting requirements in 40 CFR 1068.501.
- While most of the changes being adopted for part 1065 will only affect diesel nonroad engines, we are also making minor changes that will also apply for SI engines. These changes, however, are generally limited to clarifications, corrections, and options. They will not affect the stringency of the standards or create new burdens for manufacturers.

IV. Our Program for Controlling Nonroad, Locomotive and Marine Diesel Fuel Sulfur

We are finalizing today a two-step sulfur standard for nonroad, locomotive and marine (NRLM) diesel fuel that will achieve significant, cost-effective sulfate PM and SO_2 emission reductions. These emission reductions will, by themselves, provide dramatic environmental and public health benefits which far outweigh the cost of meeting the standards necessary to achieve them. In addition, the final sulfur standards for nonroad diesel fuel will enable advanced high efficiency emission control technology to be applied to nonroad engines. As a result, these nonroad fuel sulfur standards, coupled with our program for more stringent emission standards for new nonroad engines and equipment, will also achieve dramatic NO_X and PM emission reductions. Sulfur significantly inhibits or impairs the function of the diesel exhaust emission control devices which will generally be necessary for nonroad diesel engines to meet the emission standards finalized today. With the 15 ppm sulfur standard for nonroad diesel fuel, we have concluded that this emission control technology will be available for model year 2011 and later nonroad diesel engines to achieve the NO_X and PM emission standards adopted today. The benefits of today's program also include the sulfate PM and SO_2 reductions achieved by establishing the same standard for the sulfur content of locomotive and marine diesel fuel.

The sulfur requirements established under today's program are similar to the sulfur limits established for highway diesel fuel in prior rulemakings —500 ppm in 1993 (55 FR 34120, August 21, 1990) and 15 ppm in 2006 (66 FR 5002, January 18, 2001). Beginning June 1, 2007, refiners will be required to produce NRLM diesel fuel with a maximum sulfur content of 500 ppm. Then, beginning June 1, 2010, the sulfur content will be reduced for nonroad diesel fuel to a maximum of 15 ppm. The sulfur content of locomotive and marine diesel fuel will be reduced to 15 ppm beginning June 1, 2012. The program contains certain provisions to ease refiners' transition to the lower sulfur standards and to enable the efficient distribution of all diesel fuels. These provisions include the 2012 date for locomotive and marine diesel fuel, early credits for refiners and importers and special provisions for small refiners, transmix processors, and entities in the fuel distribution system.

In general, the comments we received during the public comment period supported the proposed program. Adjustments we have made to the proposed program will make the final program even stronger, both in terms of our ability to enforce it and the environmental and public health benefits that it will achieve. In particular, today's final program contains provisions to smooth the refining industry's transition to the low sulfur fuel requirements, encourage earlier introduction of cleaner burning fuel, maintain the fuel distribution system's flexibility to fungibly distribute similar products, and provide an outlet

for off-specification distillate product, all while maintaining, and even enhancing, the health and environmental benefits of today's program.

The first adjustment that we made to the proposed program was to move from the ''refiner baseline'' approach discussed in the proposal to a ''designate and track'' approach. Under the proposed refiner baseline approach, any refiner or importer could choose to fungibly distribute its 500 ppm sulfur NRLM and highway diesel fuels without adding red dye to the NRLM at the refinery gate. However, the refiners' production would then be subject to a non-highway distillate baseline, established as a percentage of its total distillate fuel production volume. While EPA preferred this approach in the proposal, we decided not to finalize it because we concluded that it would have unnecessarily constrained refiners' ability to meet market demands. It would have encouraged them to dye 500 ppm sulfur NRLM at the refinery gate, resulting in an additional grade of diesel fuel and, consequently, an added burden to the distribution system. Furthermore, we were concerned that it would have created a trend that could reduce the volume of 15 ppm sulfur highway diesel fuel and potential options to remove the market constraints could have increased the possibility for reduced volume.

In place of the refiner baseline approach, we are finalizing a designate and track approach. The final designate and track approach is a modified version of the designate and track approach discussed in the proposal. As finalized it now allows us to enforce the program through the entire distribution system. In essence, the final designate and track approach requires refiners and importers to designate the volumes of diesel fuel they produce and/or import. Refiners/importers will identify whether their diesel fuel is highway or NRLM and the applicable sulfur level. They may then mix and fungibly ship highway and NRLM diesel fuels that meet the same sulfur specification without dyeing their NRLM diesel fuel at the refinery gate. The designations will follow the fuel through the distribution system with limits placed on the ability of downstream parties to change the designation. These limits are designed to restrict the inappropriate sale of 500 ppm sulfur NRLM diesel fuel into the highway market , the inappropriate sale of heating oil into the NRLM market, the inappropriate sale of 500 ppm sulfur LM into the nonroad market, and to implement the downgrading restrictions that apply to 15 ppm sulfur highway diesel fuel. The designate and track approach includes record keeping and reporting requirements for all parties in the fuel distribution system, associated with tracking designated fuel volumes through each custodian in the distribution chain until the fuel exits the terminal. The program also includes enforcement and compliance assurance provisions to enable the Agency to rapidly and accurately review for discrepancies the large volume of data collected on fuel volume hand-offs. The bulk of the designate and track provisions end May 31, 2010 when all highway diesel fuel must meet the 15 ppm sulfur standard. However, as discussed below, scaled back designate and track provisions continue beyond 2010 for purposes of enforcing against heating oil being used in the NRLM market and to enforce against 500 ppm LM diesel fuel being used in the nonroad market.

The second adjustment that we made to the proposed NRLM diesel fuel program was to establish a 15 ppm sulfur standard at the refinery gate for locomotive and marine (LM) diesel fuel in addition to nonroad (NR) diesel fuel.[89] We are finalizing this standard for several reasons as discussed below.

While we are finalizing a 15 ppm sulfur standard for locomotive and marine diesel fuel, we are doing so in a manner that responds to the primary concerns raised in comments regarding the need for an outlet for off-specification product. We are setting a refinery gate standard of 15 ppm sulfur beginning June 1, 2012, two years later than for nonroad diesel fuel. We are also continuing to provide an outlet for off-specification product generated in the distribution system, thereby affording the opportunity to reduce reprocessing and transportation costs. We are leaving the downstream standard for LM diesel fuel at 500 ppm sulfur. In this way the LM diesel fuel pool may remain an outlet for off-specification distillate product and interface/transmix material.

In developing the provisions of the NRLM diesel fuel program adopted today, we identified several principles that we want the program to achieve. Specifically, as described in more detail below, we believe the fuel program—

(1) Achieves the greatest reduction in sulfate PM and SO_2 emissions from nonroad, locomotive, and marine diesel engines as early as practicable;

(2) Provides for a smooth transition of the NRLM diesel fuel pool to 15 ppm sulfur;

(3) Ensures that 15 ppm sulfur diesel fuel is produced and distributed widely for use in all 2011 and later model year nonroad diesel engines;

(4) Ensures that the fuel program's requirements are enforceable and verifiable.

(5) Enables the efficient distribution of all diesel fuels; and

(6) Maintains the benefits and program integrity of the highway diesel fuel program.

The remainder of this section covers several topics. In section IV.A, we discuss the fuel that is covered by today's program, the standards that apply for refiners and importers (for both steps of the program), and the standards that apply for downstream entities. In section IV.B, we address the various hardship provisions that we are including in today's program. In section IV.C, we describe the special provisions that apply in the State of Alaska and the Territories. Next, in section IV.D, we describe the design of the designate and track provisions of the NRLM diesel fuel program for compliance purposes and how it differs from what we proposed. In section IV.E, we discuss the impact of today's program on state NRLM diesel fuel programs. In sections IV.F and G, we discuss the technological feasibility of the NRLM diesel fuel standards adopted today and the impacts of today's program on lubricity and other fuel properties. Finally, in section IV.H, we discuss the steps the Agency will take to streamline the refinery air permitting process for the equipment that refiners may need to install to meet today's NRLM diesel fuel standards..

Analyses supporting the design and cost of the fuel program are located in chapters 5, 7, and 8 of the RIA. Section V of this preamble discusses the details of the additional compliance and enforcement provisions affecting NRLM diesel fuel and explains various additional elements of the program.

A. Nonroad, Locomotive and Marine Diesel Fuel Quality Standards

1. What Fuel Is Covered by This Program?

The fuel covered by today's final rule is generally the same as the fuel that was covered by the proposal. We have not expanded or reduced the pool of diesel fuel that will be subject to the lower sulfur standards. However, the second step of the program now includes the same ultra low sulfur standard for locomotive and marine diesel fuel as for nonroad diesel fuel.

[89] While today's program does not establish more stringent emission standards for locomotive or marine diesel engines, the Agency intends in the near future to initiate a rulemaking to adopt new emission standards for locomotive and marine engines based on the use of high efficiency exhaust emission control technology like that required for the nonroad standards adopted in today's rule. An advanced notice of proposed rulemaking (ANPRM) for this rule is published elsewhere in today's **Federal Register**, June 29, 2004.

Specifically, the sulfur standards finalized under today's program apply to all the diesel fuel that is used in nonroad, locomotive, and marine diesel applications—fuel not already covered by the previous standards for highway diesel fuel. This includes all fuel used in nonroad, locomotive, and marine diesel engines, except for fuels heavier than a No. 2 distillate used in Category 2 and 3 marine engines [90] and any fuel that is exempted for national security or other reasons. While we are not adopting sulfur standards for other distillate fuels (such as jet fuel, heating oil, kerosene, and No. 4 fuel oil) we are adopting provisions to prevent the inappropriate use of these other fuels. Use of distillate fuels in nonroad, locomotive, or marine diesel engines will generally be prohibited unless they meet the fuel sulfur standards finalized today.[91] The program includes several provisions, as described below in section IV.D, to ensure that heating oil and other higher sulfur distillate fuels will not be used in nonroad, locomotive, or marine applications.

The regulated fuels under today's program include the following:

(1) Any No. 1 and 2 distillate fuels used, intended for use, or made available for use in nonroad, locomotive, or marine diesel engines. Fuels under this category include those meeting the American Society for Testing and Materials (ASTM) D 975 or D 396 specifications for grades No. 1–D and No. 2–D. Fuels meeting ASTM DMX and DMA specifications would be covered;

(2) Any No. 1 distillate fuel (*e.g.*, kerosene) added to such No. 2 diesel fuel, *e.g.*, to improve its cold flow properties;

(3) Any other fuel used in nonroad, locomotive, or marine diesel engines or blended with diesel fuel for use in such engines. Fuels under this category include non-distillate fuels such as biodiesel and certain specialty fuel grades such as JP–5, JP–8, and F76 if used in a nonroad, locomotive, or marine diesel engine, except when a national security or research and development exemption has been approved. See V. A.1. and 2.

On the other hand, the sulfur standards do not apply to—

(1) No. 1 distillate fuel used to power aircraft;

(2) No. 1 or No. 2 distillate fuel used for stationary source purposes, such as to power stationary diesel engines, industrial boilers, or for heating;

(3) Number 4, 5, and 6 fuels (*e.g.*, residual fuels or residual fuel blends, IFO Heavy Fuel Oil Grades 30 and higher), used for stationary source purpose;

(4) Any distillate fuel with a T–90 distillation point greater than 700 F, when used in Category 2 or 3 marine diesel engines. This includes Number 4, 5, and 6 fuels (*e.g.*, IFO Heavy Fuel Oil Grades 30 and higher), as well as fuels meeting ASTM specifications DMB, DMC, and RMA–10 and heavier; and

(5) Any fuel for which a national security or research and development exemption has been approved or fuel that is exported from the U.S. (see section V.A.1. and 2).

It is useful to clarify what marine diesel fuels are covered by the sulfur standards. As with nonroad and locomotive diesel fuel, our basic approach is that the standards apply to any diesel or distillate fuel used or intended for use in marine diesel engines. However, the fuel used by marine diesel engines spans a wide variety of fuels, ranging from No. 1 and 2 diesel fuel to residual fuel and residual fuel blends used in the largest engines. It is not EPA's intention to cover all such fuels, and EPA has adopted an objective criteria to identify those marine fuels subject to regulation and those that are not. Any distillate fuel with a T–90 greater than 700 F will not be subject to the sulfur standards when used in Category 2 or 3 marine engines. This criteria is designed to exclude fuels heavier than No. 2 distillate, including blends containing residual fuel. In addition, residual fuel is not subject to the sulfur standards.

While many marine diesel engines use No. 2 distillate, ASTM specifications for marine fuels identify four kinds of marine distillate fuels: DMX, DMA, DMB, and DMC. DMX is a special light distillate intended mainly for use in emergency engines. DMA (also called MGO) is a general purpose marine distillate that is to contain no traces of residual fuel. These fuels can be used in all marine diesel engines but are primarily used by Category 1 engines. DMX and DMA fuels intended for use in any marine diesel engine are subject to the fuel sulfur standards.

DMB, also called marine diesel oil, is not typically used with Category 1 engines, but is used for Category 2 and 3 engines. DMB is allowed to have a trace of residual fuel, which can be high in sulfur. This contamination with residual fuel usually occurs due to the distribution process, when distillate is brought on board a vessel via a barge that has previously contained residual fuel, or using the same supply lines as are used for residual fuel. DMB is produced when fuels such as DMA are brought on board the vessel in this manner. EPA's sulfur standards will apply to the distillate that is used to produce the DMB, for example the DMA distillate, up to the point that it becomes DMB. DMB itself is not subject to the sulfur standards when it is used in Category 2 or 3 engines.

DMC is a grade of marine fuel that may contain some residual fuel and is often a residual fuel blend. This fuel is similar to No. 4 diesel, and can be used in Category 2 and Category 3 marine diesel engines. DMC is produced by blending a distillate fuel with residual fuel, for example at a location downstream in the distribution system. EPA's standards will apply to the distillate that is used to produce the DMC, up to the point that it is blended with the residual fuel to produce DMC. DMC itself is not subject to the sulfur standards when it is used in Category 2 or 3 marine engines.

Residual fuel is typically designated by the prefix RM (*e.g.*, RMA, RMB, etc.). These fuels are also identified by their nominal viscosity (*e.g.*, RMA10, RMG35, etc.). Most residual fuels require treatment by a purifier-clarifier centrifuge system, although RMA and RMB do not require this. For the purpose of this rule, we consider all RM grade fuel as residual fuel. Residual fuel is not covered by the sulfur content standards as it is not a distillate fuel.

The distillation criteria adopted by EPA, T–90 greater than 700F, is designed to identify those fuels that are not subject to the sulfur standards when used in Category 2 or 3 marine diesel engines. It is intended to exclude DMB, DMC, and other heavy distillates or blends, when used in Category 2 or 3 marine diesel engines.

Hence, the fuel that refiners and importers are required to produce to the more stringent sulfur standards include those No. 1 and No. 2 diesel fuels as well as similar distillate or non-distillate fuels that are intended or made available for use in NRLM diesel engines. Furthermore, the sulfur standard also covers any fuel that is blended with or substituted for No. 1 or No. 2 diesel fuel for use in nonroad, locomotive, or marine diesel engines. For instance, as required under the highway diesel fuel program, in those situations where the same batch of kerosene is distributed for two purposes (*e.g.*, kerosene to be used for heating and to improve the cold flow of No. 2 NRLM diesel fuel), or where a batch distributed just for heating is later distributed for blending with No. 2 diesel fuel, that batch of kerosene must meet the standards adopted today for NRLM

[90] Category 3 marine engines frequently are designed to use residual fuels and include special fuel handling equipment to use the residual fuel.

[91] For the purposes of this final rule, the term heating oil basically refers to any No. 1 or No. 2 distillate other than jet fuel, kerosene, and diesel fuel used in highway, nonroad, locomotive, or marine applications. For example, heating oil includes fuel which is suitable for use in furnaces, boilers, stationary diesel engines and similar applications and is commonly or commercially known or sold as heating oil, fuel oil, or other similar trade names.

diesel fuel. The purpose of this requirement is to ensure that fuels like jet fuel, kerosene, and/or military specification fuels meet the diesel fuel sulfur standards adopted under today's program when they are used in nonroad, locomotive, or marine diesel engines.

2. Standards and Deadlines for Refiners and Importers

The NRLM diesel fuel program adopted today is a two-step approach to reduce the sulfur content of NRLM diesel fuel from uncontrolled levels down to 15 ppm sulfur. While we received several comments supporting a single step down to 15 ppm sulfur, the vast majority of commenters, especially most refiners and engine manufacturers, supported the two-step approach. We are finalizing the two-step approach primarily because it achieves the greatest reduction in sulfate PM and SO_2 emissions from nonroad, locomotive, and marine diesel engines as early as practicable. By starting with an initial step of 500 ppm sulfur we can achieve significant emission reductions and associated health and welfare benefits from the current fleet of equipment as soon as possible. As discussed in section VI, the health-related benefits of the fuel standards finalized today, even without the engine standards, amount to more than $28 billion in 2030, while the projected costs, after taking into account engine maintenance benefits amount to just $0.7 billion.

In addition, the two-step approach encourages a more smooth and orderly transition by the refining industry to 15 ppm sulfur NRLM diesel fuel, by providing more time for refiners to develop the most cost-effective approaches, finance them, and then implement the necessary refinery modifications.

Finally, by waiting until 2010 to drop to the 15 ppm sulfur standard for NR diesel fuel, the two-step approach harmonizes with the highway diesel fuel program by delaying the implementation of the 15 ppm sulfur standard for NR diesel fuel until the end of the phase-in period for 15 ppm sulfur highway diesel fuel. The 2010 date also harmonizes with the date 15 ppm nonroad fuel is needed to enable the nonroad engines standards finalized today. The second step to 15 ppm sulfur for the LM diesel fuel is set for 2012. On balance we believe that the advantages of the two-step approach outweigh those of a single step down to 15 ppm.

As discussed in section IV.C, below, later deadlines for meeting the 500 and 15 ppm sulfur standards apply to refineries covered by special hardship provisions as well as transmix processors.

a. The First Step to 500 ppm Sulfur NRLM Diesel Fuel

Under today's program, NRLM diesel fuel produced by refiners or imported into the U.S. by importers must meet a 500 ppm sulfur standard beginning June 1, 2007. Refiners and importers may comply by either producing such fuel at or below 500 ppm sulfur, or they may comply by obtaining credits as discussed in section IV.D below.

We believe that the adopted level of 500 ppm sulfur is appropriate for several reasons. First, the reduction to 500 ppm sulfur is significant environmentally. The 500 ppm sulfur level achieves approximately 90 percent of the sulfate PM and SO_2 benefits otherwise achievable by going all the way to 15 ppm sulfur. Second, because this first step is only to 500 ppm sulfur, it also allows for a short lead time for implementation, enabling the environmental benefits to begin accruing as soon as possible. Third, it is consistent with the current specification for highway diesel fuel, a grade which may remain for highway purposes until 2010. As such, adopting the same 500 ppm sulfur level for NRLM diesel fuel helps to avoid issues and costs associated with more grades of fuel in the distribution system during this initial step of the program.

b. The Second Step to 15 ppm Sulfur NRLM Diesel Fuel

We are finalizing a second step of sulfur control down to 15 ppm sulfur for all NRLM. This second step provides additional important direct sulfate PM and SO_2 emission reductions and associated health benefits. As discussed in the RIA, the health related benefits for this second step of fuel control by itself are greater than the associated cost. Furthermore, the second step for nonroad diesel fuel is essential to enable the application of high efficiency exhaust emission control technologies to nonroad diesel engines beginning with the 2011 model year as discussed in Section II of this preamble.

In the proposal, the second step of the program only applied to nonroad diesel fuel, while locomotive and marine diesel fuel could remain at 500 ppm sulfur. We also sought comment on finalizing the 15 ppm sulfur standard for LM diesel fuel in 2010 along with nonroad diesel fuel, as well as delaying it until as late as 2012 to allow for an additional outlet for any off-specification product a refinery might produce as it shifts all of its distillate production to 15 ppm sulfur.[92]

We are finalizing the 15 ppm sulfur standard for locomotive and marine diesel fuel, along with nonroad diesel fuel, for several reasons. First, it will provide important health and welfare benefits from the additional sulfate PM and SO_2 emission reductions as early as possible. Second, it is technologically feasible, as it is for nonroad diesel fuel. Third, the benefits outweigh the costs and the costs do not otherwise warrant delaying this second step for locomotive and marine. As shown in chapter 8 of the RIA, the costs for the increment of LM diesel fuel going from 500 to 15 ppm sulfur is just $0.20 billion in 2030. Fourth, it will simplify the fuel distribution system and overall design of the fuel program. For example, the addition of a marker to locomotive and marine diesel fuel after 2012 is no longer necessary to successfully enforce the program. Finally, it will allow refiners to coordinate plans to reduce the sulfur content of all of their off-highway diesel fuel at one time.

Our primary reason in the NPRM for leaving locomotive and marine diesel fuel at the 500 ppm sulfur specification was to preserve an outlet for off-specification product that may be created in the distribution system through contamination of 15 ppm sulfur diesel fuel with higher sulfur distillates and for off-specification batches of fuel that are produced by refineries during the first couple years of the 15 ppm sulfur program (when they are still perfecting their production processes). However, we have concluded that it is not necessary to leave the standard for all locomotive and marine diesel fuel at the 500 ppm sulfur specification to address these concerns. Setting a 15 ppm sulfur standard for refiners and importers in 2012, but maintaining a downstream standard for locomotive and marine diesel fuel at 500 ppm sulfur and allowing off-specification product to continue to be sold into this market accomplishes the same goal.

In addition, controlling the sulfur content of NRLM diesel fuel from uncontrolled levels to 15 ppm is clearly a cost-effective fuel control program. While the incremental cost-effectiveness from 500 ppm sulfur to 15 ppm sulfur is less cost-effective, the benefits of this second step outweigh the costs, the concerns about a market for off-specification product have been addressed, and other factors discussed

[92] Off-specification fuel here refers to 15 ppm diesel fuel that becomes contaminated such that it no longer meets the 15 ppm sulfur cap. In most cases, off-specification 15 ppm sulfur diesel fuel is expected to easily meet a 500 ppm sulfur cap.

above support the reasonableness of this approach. The body of evidence strongly supports the view that controlling sulfur in NRLM fuel to 15 ppm, through a two-step process, is quite reasonable in light of the emissions reductions achieved, taking costs into consideration.

Implementation of today's rule will reduce the sulfur level of almost all distillate fuel to a 15 ppm maximum sulfur level. In addition to the small refiner, hardship, and other provisions adopted in this rule, EPA is adopting several provisions that will help ensure a smooth transition to the second step of 15 ppm sulfur diesel fuel. First, refiners and importers of locomotive and marine diesel fuel, a small segment of the entire distillate pool, will be required to meet a 15 ppm sulfur standard starting June 1, 2012, two years later than for nonroad diesel fuel. Second, 500 ppm sulfur diesel fuel generated in the distribution system through contamination of 15 ppm sulfur fuel can be marketed in the nonroad, locomotive and marine market until June 2014, and in the locomotive and marine market after that date. Third, 500 ppm sulfur diesel fuel produced by transmix processors from contaminated downstream diesel fuel can also be marketed to the nonroad, locomotive and marine markets, under the same schedule. While today's rule does not contain an end date for the downstream distribution of 500 ppm sulfur locomotive and marine fuel, we will review the appropriateness of allowing this flexibility based on experience gained from implementation of the 15 ppm sulfur NRLM diesel fuel standard. We expect to conduct such an evaluation in 2011.

When EPA adopted a 15 ppm sulfur standard for highway diesel fuel, we included several provisions to ensure a smooth transition to 15 ppm sulfur highway fuel. One provision was a temporary compliance option, with an averaging, banking and trading component. In a similar manner, the 2012 deadline for 15 ppm sulfur LM fuel, the last, relatively small segment of diesel fuel, will help ensure that the entire pool of diesel fuel is smoothly transitioned to the 15 ppm sulfur level over a short period of time. (See section 8.3 of the summary and analysis of comments.)

EPA is also adopting two provisions aimed at smoothing the transition of the distribution system to ultra low sulfur diesel fuel. These provisions are designed to accommodate off-specification fuel generated in the distribution system, such as through the mixing that occurs at product interfaces. This off-specification material generally cannot be added in any significant quantity to either of the adjoining products that produced the interface.[93] Under today's program, as discussed in more detail in section A.3, below, off-specification material that is generated in the distribution system may be distributed as 500 ppm NRLM diesel fuel from June 1, 2010 through May 31, 2014 and as 500 ppm LM from June 1, 2014 and beyond. Furthermore, as discussed in section IV.C, below, transmix processors, which are facilities that process transmix by separating it into its components (*e.g.*, separating gasoline from diesel fuel), are treated as a separate class of refiners. One hundred percent of the diesel fuel they produce from transmix may be sold as high sulfur NRLM until June 1, 2010, 500 ppm sulfur NRLM until June 1, 2014, and 500 ppm sulfur LM diesel fuel after June 1, 2014.

These provisions provide refiners and importers with a similar degree of flexibility for off-specification product as the proposal which held the sulfur standard for all locomotive and marine diesel fuel at 500 ppm indefinitely. If off-specification product is produced, there is a temporary outlet for it. If providing the off-specification product to a locomotive and marine market is difficult under this final rule, such that a refiner will choose to re-process it, then the refiner would have been in the same position under the proposal. Furthermore, these provisions provide the refining industry an alternative to reprocessing the off-specification material created in the distribution system, which preserves refining capacity for the production of new fuel volume, helping to maintain overall diesel fuel supply.

As with the 500 ppm sulfur standard under the first step of today's program, refiners and importers may comply with the 15 ppm sulfur standard by either producing NRLM diesel fuel containing no more than 15 ppm sulfur or by obtaining sulfur credits (until June 1, 2014), as described below.

c. Cetane Index or Aromatics Standard

Currently, in addition to containing no more than 500 ppm sulfur, highway diesel fuel must meet a minimum cetane index level of 40 or, as an alternative, contain no more than 35 volume percent aromatics. Today's program extends this cetane index/aromatics content specification to NRLM diesel fuel.

One refining company commented that EPA should not implement the cetane index and aromatic requirements in the proposed rule since the impacts are weak or nonexistent for engines to be used in the future. In addition, the commenter stated that the vast majority of diesel fuel already meets the EPA cetane index/aromatics specification for highway diesel fuel and that there is nothing in the RIA that either demonstrates the benefits or supports the need for such a requirement. The commenter also stated that EPA should not set a requirement simply because the ASTM standard has a cetane number specification for a particular fuel.

Low cetane levels are associated with increases in NO_X and PM emissions from current nonroad diesel engines.[94] Thus, we expect that extending the cetane index specification to NRLM diesel fuel will directionally lead to a reduction in these emissions from the existing fleet. However, because the vast majority of NRLM diesel fuel already meets the specification, the NO_X and PM emission reductions will be small. At the same time, the refining/production costs associated with extending the cetane index specification to NRLM diesel fuel are negligible as current NRLM diesel fuel already meets a more stringent ASTM specification.

ASTM already recommends a cetane number specification of 40 for NRLM diesel fuel, which is, in general, more stringent than the similar 40 cetane index specification. Because of this, the vast majority of current NRLM diesel fuel already meets the EPA cetane index/aromatics specification for highway diesel fuel. Thus, the cetane index specification will impact only a few refiners and there will be little overall cost associated with producing fuel to meet the cetane/aromatic requirement. In fact, as discussed in chapter 5.9 of the RIA, compliance with the sulfur standards adopted today is expected to result in a small cetane increase as increases in cetane correlate with decreases in sulfur, leaving little or no further control to meet the standard.

While the emissions benefits and refining/production costs of extending the specification to NRLM diesel fuel may be small, the extension will reduce costs by giving refiners and distributors the ability to fungibly distribute highway and NRLM diesel fuels of like sulfur content. For that small fraction of NRLM diesel fuel today that does not meet the cetane index or aromatics

[93] In some cases the off-specification product can not be added to the adjoining products because of the applicable sulfur standards. In other cases, the off-specification product, called transmix, must be re-processed before it can be used.

[94] *The Effect of Cetane Number Increase Due to Additives on NO_X Emissions From Heavy-Duty Highway Engines, Final Technical Report*, February 2003, EPA420–R–03–002.

specification, the requirement will eliminate the need for refiners and fuel distributors to separately distribute fuels of different cetane/aromatics specifications. Requiring NRLM diesel fuel to meet this cetane index specification thus gives fuel distributors certainty in being able to combine shipments of highway and NRLM diesel fuels. Perhaps more importantly, it can also give engine manufacturers and end-users the confidence they need that their fuel will meet the minimum cetane or maximum aromatics standard. Given the inherent difficulty in segregating two otherwise identical fuels, were we not to carry over these standards to NRLM, lower cetane NRLM could easily find its way into current highway engines. If not designed for this lower cetane fuel, these engines could have elevated emission levels and performance problems.

Overall, we believe that there will be a small reduction in NO_X and PM emissions from current engines and the economic benefits from more efficient fuel distribution will likely exceed the cost of raising the cetane level for the small volume of NRLM diesel fuel that does not already meet the cetane index or aromatics content specification.

3. Standards, Deadlines, and Flexibilities for Fuel Distributors

The first years of the NRLM diesel fuel program include various flexibilities to smooth the refining and distribution industry's transition to 15 ppm sulfur fuel. These flexibilities include a 2012 deadline for production of 15 ppm sulfur locomotive and marine diesel fuel, credit provisions, small refiner provisions, hardship provisions, and downstream off-specification fuel provisions. As a result, during the transition years, we are not able to simply enforce the sulfur standards downstream based on a single sulfur level of the new standard. From June 1, 2007 through May 31, 2010, both 500 ppm sulfur diesel fuel and high sulfur diesel fuel can be produced, distributed, and sold for use in NRLM diesel engines. From June 1, 2010 through May 31, 2014, both 15 ppm sulfur and 500 ppm sulfur diesel fuel can be produced, distributed, and sold for use in NRLM diesel engines. Beyond June 1, 2014, both 15 ppm sulfur and 500 ppm sulfur diesel fuel that is produced from fuel product downgrade and transmix in the distribution system can be distributed and sold for use in locomotive and marine diesel engines. As these transition flexibilities expire, however, we are able to streamline our downstream enforcement provisions.

a. Standards and Deadlines From June 1, 2007 Through May 31, 2010

As soon as the program begins on June 1, 2007, all NRLM diesel fuel must be designated or classified and must comply with the designation or classification stated on its product transfer document (PTD), pump label, or other documentation. In other words, if the fuel is intended for sale as NRLM diesel fuel and is labeled as 500 ppm sulfur diesel fuel, then beginning June 1, 2007, it must comply with the 500 ppm sulfur standard. Similarly, if fuel is intended for sale as NRLM diesel fuel and is labeled as 15 ppm sulfur, then beginning June 1, 2010 (or June 1, 2009 under the early credit provisions), it must comply with the 15 ppm sulfur standard.

Beginning June 1, 2010, all NRLM diesel fuel produced or imported is required to meet at least a 500 ppm sulfur limit. In order to allow for a smooth and orderly transition to 500 ppm sulfur NRLM diesel fuel in the distribution system, and allow any remaining high sulfur fuel to be sold, we are providing parties downstream of refineries time to turnover their NRLM tanks to 500 ppm sulfur diesel fuel. At the terminal level, all NRLM diesel fuel must meet at least the 500 ppm sulfur standard beginning August 1, 2010. At any wholesale purchaser-consumer facilities and any retail stations carrying NRLM diesel fuel, including bulk plants that serve as retailers, all diesel fuel must meet the 500 ppm sulfur standard beginning October 1, 2010.[95] Thus, beginning October 1, 2010, high sulfur (greater than 500 ppm sulfur) NRLM diesel fuel may no longer legally exist in the fuel distribution system.[96]

Although we expect that most NRLM diesel fuel in the distribution system will be subject to the 500 ppm sulfur standard during the period from June 1, 2007 through May 31, 2010, based on its designation or classification, some of the 500 ppm sulfur NRLM diesel fuel may be mixed with high sulfur NRLM diesel fuel. Since the blended product will likely no longer meet the 500 ppm sulfur standard, it must be re-designated and labeled as high sulfur NRLM diesel fuel. Similarly, fuel that results from blending 500 ppm sulfur NRLM diesel fuel and heating oil must be re-designated and labeled as heating oil.

b. Standards and Deadlines From June 1, 2010 Through May 31, 2014

Beginning June 1, 2010, most NR diesel fuel will be required to meet the 15 ppm sulfur standard, and beginning June 1, 2012, most LM diesel fuel will be required to meet the 15 ppm sulfur standard. However, some production of 500 ppm sulfur NRLM diesel fuel may continue through May 31, 2014. As with the delayed downstream compliance dates for the 500 ppm sulfur standard under the first step of today's program, parties downstream of refineries will be allowed additional time to turnover their tanks to 15 ppm sulfur NR diesel fuel. Specifically, at the terminal level, all NR diesel fuel will be required to meet the 15 ppm sulfur standard beginning August 1, 2014. At any wholesale purchaser-consumer facilities and retail stations carrying all NR diesel fuel, including bulk plants serving as retailers, NR diesel fuel must meet the 15 ppm sulfur standard beginning October 1, 2014. Thus, beginning October 1, 2014, 500 ppm sulfur NR diesel fuel may no longer legally exist in the fuel distribution system.[97]

Like the first step to 500 ppm sulfur, prior to these 2014 downstream deadlines all NRLM diesel fuel would still be designated or classified with respect to sulfur level and required to meet the designation or classification stated on its PTD, pump label, or other documentation.

c. Sulfur Standard for NRLM Diesel Fuel Beginning June 1, 2014

As discussed above, all refiners will be required to produce and importers will be required to import only 15 ppm sulfur NRLM diesel fuel by June 1, 2014. However, we will continue to allow 500 ppm sulfur diesel fuel to be sold into the LM diesel fuel markets beyond 2014. The LM diesel fuel markets are expected to provide a valuable outlet for higher sulfur distillate fuel produced in the distribution system, at least through the early years of the program. Consequently, beyond 2014, both 15 ppm sulfur and 500 ppm sulfur LM diesel fuel may continue to exist in the distribution system, and each fuel must comply with the designation stated on its PTD, pump label, or other documentation.

[95] A bulk plant is a secondary distributor of refined petroleum products. They typically receive fuel from terminals and distribute fuel in bulk by truck to end users. Consequently, while for highway fuel, bulk plants often serve the role of a fuel distributor, delivering fuel to retail stations, for nonroad fuel, they often serve the role of the retailer, delivering fuel directly to the end-user.

[96] By December 1, 2010, all NRLM diesel fuel, including fuel in end-user tanks, must comply with at least the 500 ppm sulfur standard.

[97] By December 1, 2014, all NR diesel fuel, including fuel in end-user tanks, must comply with at least the 15 ppm sulfur standard.

d. Interface/Transmix Flexibility for Fuel Distributors

As described above, today's program provides flexibility to the distribution system by allowing interface/transmix material generated within the distribution system to be sold into the NRLM diesel fuel markets. Specifically, any fuel interface/transmix generated in the fuel distribution system may be sold as:

(1) High sulfur NRLM diesel fuel or heating oil from June 1, 2007 through May 31, 2010;

(2) 500 ppm sulfur NRLM diesel fuel or heating oil from June 1, 2010 through May 31, 2014; or

(3) 500 ppm sulfur LM diesel fuel or heating oil after June 1, 2014.

Hence, beginning June 1, 2014, interface/transmix material exceeding 15 ppm sulfur may only be sold into the LM diesel fuel or heating oil markets. As discussed above, the downstream standard for LM diesel fuel will be 500 ppm sulfur. However, heating oil may not be shifted into the LM markets. Parties in the distribution system receiving diesel fuel with a sulfur content greater than 15 ppm sulfur must maintain records and report to EPA information demonstrating that they did not shift heating oil into the LM markets, as discussed in section IV.D.

The generation of greater than 15 ppm sulfur distillate fuel from pipeline interface/transmix cannot be avoided due to the physical realities of a multi-product fuel distribution system. Such fuel first appears at the terminus of the pipeline distribution system; at terminals due to the generation of segregated interface, or at transmix processing facilities.[98] In areas where there is a strong demand for heating oil, much of this pipeline-generated off-specification fuel can be sold into the heating oil market, just as it is today. However, in many areas of the country the demand for heating oil would not be sufficient to accommodate distillate fuel exceeding 15 ppm sulfur that is generated in the pipeline. Therefore, such fuel would need to be returned to a refinery for reprocessing to meet a 15 ppm sulfur standard. In addition, some refiners may be reluctant to accept such material for reprocessing given the impact this would have on their refinery operations. More importantly, because such material appears at the terminus of the pipeline distribution system and often where no access to pipeline or marine shipment is available, it would have to be shipped back to a refinery by truck, or rail if available, at additional cost.

As discussed in chapter 7 of the RIA, fuel generated from such interface/transmix will typically meet a 500 ppm sulfur standard. Therefore, allowing the continued use of such 500 ppm sulfur diesel fuel in locomotive and marine engines could reduce the burden on the fuel distribution industry by lowering costs. Our cost estimates of marketing such fuel include additional shipping charges for situations where there is not a local locomotive or marine market (see section VI of this preamble).[99] Allowing the continued sale of 500 ppm sulfur diesel fuel into the locomotive and marine markets without requiring it to be reprocessed will also help preserve refining capacity for the overall diesel fuel production. Therefore, this provision also serves to address lingering concerns expressed by some refiners regarding the impacts of the 15 ppm sulfur standard for highway and NRLM diesel fuel on overall diesel fuel supply.

Downstream-generated 500 ppm sulfur diesel fuel may only be used in nonroad engines until December 1, 2014, due to concerns regarding enforceability and the increased potential for misfueling of nonroad equipment (equipment with advanced emission controls). Beginning with the 2011 model year, such equipment will require the use of 15 ppm sulfur diesel fuel to operate properly. The same concerns do not exist regarding the continued use of such 500 ppm sulfur diesel fuel in locomotive and marine engines for three reasons. First, locomotive and marine engines are not currently required to be equipped with the sulfur sensitive emissions aftertreatment that will start being used on nonroad equipment in 2011.[100] Second, locomotive and marine markets are centrally fueled to a much greater extent than nonroad markets, and thus enforceability is not as significant of an issue. Finally, we believe the program's designate and track provisions discussed below will be sufficient to enforce the limits on production and use of 500 ppm sulfur diesel fuel.

It is difficult to project exactly how much of this downstream generated downgraded fuel could be segregated and shipped to LM markets. However, it is clear that this provision represents an important flexibility for the distribution system. In fact, it provides virtually the same flexibility as provided by the proposal to handle off-specification product. In both cases, use of the flexibility is dependent on the ability to segregate the interface and transport it to available LM markets. While today's rule does not contain an end date for the downstream distribution of 500 ppm sulfur locomotive and marine fuel, we will review the appropriateness of allowing this flexibility based on experience gained from implementation of the 15 ppm sulfur NRLM diesel fuel standard. We expect to conduct such an evaluation in 2011.

A summary of the NRLM sulfur levels and final deadlines for refiners, importers, terminals, and other downstream parties is shown in table IV–1 below.

TABLE IV–1.—500 PPM SULFUR AND 15 PPM SULFUR NRLM FINAL COMPLIANCE DATES

	Refiners and importers	Credit, small refiner	Terminals	Bulk plants, wholesale purchaser-consumers and retail outlets	Other locations
500 ppm NRLM	June 1, 2007	June 1, 2010	August 1, 2010	October 1, 2010	December 1, 2010.
15 ppm NR	June 1, 2010	June 1, 2014	August 1, 2014	October 1, 2014	December 1, 2014.

[98] Segregated interface refers to the mixing zone between two batches of fuel that abut each other in the pipeline, where the volume in the mixing zone can not be cut into either of the fuel batches, but can still meet another fuel product specification without reprocessing, provided that it is drawn off of the pipeline separately and segregated.

[99] As mentioned above, the Agency intends in the near future to initiate a rulemaking to adopt new emission standards for locomotive and marine engines. An advanced notice of proposed rulemaking (ANPRM) for this rule is published elsewhere in today's **Federal Register**, June 29, 2004. While we are not finalizing a sunset date for this downgrade provision in today's final rule, we are evaluating the appropriateness of establishing a sunset date on this provision in the context of the subsequent engine standards rule. We also intend to review the appropriateness of any sunset provision in light of experience gained from implementation of the 15 ppm sulfur NRLM diesel fuel standard. We would conduct such an evaluation in 2011.

[100] Although, as mentioned above, the Agency intends in the near future to initiate a rulemaking to adopt new emission standards for locomotive and marine engines. An advanced notice of proposed rulemaking (ANPRM) for this rule is published elsewhere in today's **Federal Register**, June 29, 2004.

TABLE IV–1.—500 PPM SULFUR AND 15 PPM SULFUR NRLM FINAL COMPLIANCE DATES—Continued

	Refiners and importers	Credit, small refiner	Terminals	Bulk plants, wholesale purchaser-consumers and retail outlets	Other locations
15 ppm LM	June 1, 2012	June 1, 2014.			

4. Diesel Sulfur Credit Banking and Trading Provisions

Today's final program includes provisions for refiners and importers to generate early credits for the production of 500 ppm sulfur NRLM diesel fuel prior to June 1, 2007 and for the production of 15 ppm sulfur NRLM diesel fuel prior to June 1, 2010. These credit banking and trading provisions will provide implementation flexibility by facilitating a somewhat smoother transition at the start of the program in 2007, with some refineries/import facilities complying early, others on time, and others a little later. These credit banking and trading provisions may also facilitate some of the environmental benefits of the program being achieved earlier than otherwise required, and may increase the overall environmental benefits of the program. As discussed below, overall benefits will accrue if refiners produce 500 ppm earlier in lieu of high sulfur NRLM and then bank those credits to continue producing 500 ppm sulfur NR diesel fuel in 2010 or 500 ppm LM diesel fuel in 2012 in lieu of 15 ppm.[101]

Specifically, credits generated under the NRLM diesel fuel program may be banked and later used to delay compliance with either the 500 ppm sulfur NRLM standard that begins in 2007, the 15 ppm sulfur NR standard that begins in 2010, or the 15 ppm sulfur LM standard that begins in 2012. Credits may also be traded within companies such that credits generated at one refinery/import facility in a given company may be traded to another refinery/import facility within that same company. In addition, refiners or importers may purchase credits generated by other refiners or importers to meet the program requirements. Finally, and perhaps most importantly, individual refineries/import facilities may be able to use credits to permit the continued sale of otherwise off-specification product at the beginning of the program's second step when they are still adjusting their operations for consistent production/importation of NRLM diesel fuel that is subject to the new sulfur standards.

a. Credit Generation From June 1, 2006 Through May 31, 2007

Credits may be generated under today's program to allow for the production of high sulfur NRLM diesel fuel after June 1, 2007. A refiner or importer may obtain credit for early production/importation of fuel meeting the 500 ppm sulfur standard that they designate as NRLM diesel fuel, from June 1, 2006 through May 31, 2007. In addition, small refiners may also generate credits for the early production of 500 ppm sulfur diesel fuel that they designate as NRLM diesel fuel. As described in section IV.B, below, small refiners are not required to produce any 500 ppm sulfur NRLM diesel fuel until June 1, 2010. Those small refiners who choose to comply with the 500 ppm sulfur standard earlier than required, that is before June 1, 2010, may generate credits for any volume of diesel fuel they produce from June 1, 2007 through May 31, 2010 and designate as NRLM. Credits for the early production of 500 ppm sulfur fuel (including by small refineries) are fungible, may be banked for future use, or traded to any other refiner or importer nationwide. In order to ensure that these early credits are real and not merely shifts from the highway market, both early credits and small refinery credits will be subject to a limit determined by the following formula:

$Credit_{HS} = (Vol_{15} + Vol_{500}) - Vol_{hwy}$

$Credit_{HS}$ Limit = $(Vol_{15} + Vol_{500}) - Base_{hwy}$

Where:

$Credit_{500}$ Limit = Limit for 500 ppm NRLM credits

$Credit_{HS}$ = High-Sulfur NRLM credits[102]

Vol_{15} = Volume of 15 ppm sulfur diesel fuel produced and designated as highway or NRLM

Vol_{500} = Volume of 500 ppm sulfur diesel fuel produced and designated as highway or NRLM

$Base_{hwy}$ = 2003–2005 highway diesel fuel baseline volume

Vol_{hwy} = Volume of diesel fuel produced and designated as highway

If the excess production is 15 ppm sulfur diesel fuel instead of 500 ppm sulfur diesel fuel, then the refiner will have the option of generating 500 ppm sulfur credits under the highway diesel fuel program. Credit may not be earned under both programs for a given volume of 500 ppm sulfur or 15 ppm sulfur diesel fuel.

b. Credit Generation From June 1, 2009 Through May 31, 2010

In addition to allowing credit for the early production of 500 ppm sulfur NRLM diesel fuel, today's program also allows credit for the early production of 15 ppm sulfur NRLM diesel fuel. Specifically, refiners and importers may obtain credit for early production/importation of fuel meeting the 15 ppm sulfur standard and that they designate as NRLM from June 1, 2009 through May 31, 2010. In addition, small refiners, which are not required to produce any 15 ppm sulfur NRLM diesel fuel until June 1, 2014, may also generate credits for the early production of any volume of 15 ppm sulfur diesel fuel that they designate as NRLM from June 1, 2010 through December 31, 2013. Again, these early credits are fungible, may be banked for future use, or traded to any other refinery or importer nationwide. However, in order to ensure these credits are real and not merely shifts from the highway market, credits for the early production or importation of 15 ppm sulfur fuel will be subject to a limit determined by the following formula:

$Credit_{500} = Vol_{15} - Vol_{15hwy}$

$Credit_{500}$ Limit = $Vol_{15} - Base_{15hwy}$

Where:

$Credit_{500}$ Limit = Limit for 500 ppm sulfur NRLM credits

Vol_{15} = Volume of 15 ppm sulfur diesel fuel produced and designated as highway or NRLM

$Base_{15hwy}$ = 2006–2008 15 ppm sulfur highway diesel fuel baseline volume

[101] We are not adopting specific provisions to generate credits for early production of LM diesel fuel prior to June 1, 2012. The difference in start date between 2010 and 2012 already provides additional flexibility to producers of LM diesel fuel, and setting separate credit generation periods for NR and LM diesel fuel would unnecessarily complicate the compliance assurance provisions.

[102] For the purposes of this rule, credits are labeled on the basis of their use in order to follow the convention used in the highway diesel rule. A high-sulfur credit is generated through the production of one gallon of 500 ppm sulfur NRLM diesel fuel and allows the production of one gallon of high sulfur NRLM diesel fuel.

Hence, to generate credits, a refiner or importer's highway diesel fuel volume for the compliance period must be greater than or equal to the baseline volume. That is, a refiner or importer may only generate credits for ''new'' volumes of 15 ppm sulfur diesel fuel that it produces. If their highway diesel fuel volume were to drop below the baseline volume, that would likely indicate a shift in production from the highway market to generate 15 ppm sulfur NRLM diesel fuel credits.

c. Credit Use

There are two ways in which refiners or importers may use high-sulfur NRLM credits under the NRLM diesel fuel program. First, credits may be used during the period from June 1, 2007 through May 31, 2010 to continue to produce high sulfur NRLM diesel fuel. Any high sulfur NRLM diesel fuel that is produced, however, must be designated and labeled as such for tracking purposes throughout the distribution system and be dyed red at the refinery gate.

The second way in which refiners and importer could use high-sulfur NRLM credits is by banking them for use during the June 1, 2010 through May 31, 2014 period. Credits used in this manner would provide a net environmental benefit, since they were generated by reducing the sulfur level from approximately 3000 ppm to less than 500 ppm (a net change of 2500 ppm sulfur), but when used only allow the sulfur level to increase from 15 ppm to 500 ppm (a net change of less than 500 ppm sulfur). 500 ppm sulfur credits generated from the early production of 15 ppm sulfur NRLM diesel fuel may also be used from June 1, 2010 through May 31, 2014. Thus, during this period, when the 15 ppm sulfur standard is in effect for nonroad diesel fuel, refiners/importers may use either high sulfur credits or 500 ppm sulfur credits to continue producing/importing 500 ppm sulfur nonroad diesel fuel. Any 500 ppm sulfur diesel fuel that is produced, however, must be appropriately designated and labeled for tracking purposes throughout the distribution system, and cannot be sold for use in 2011 and later model year nonroad engines. From June 1, 2012, when the 15 ppm sulfur standard for LM diesel fuel becomes effective, through May 31, 2014, refiners/importers may use either high sulfur credits or 500 ppm sulfur credits to continue producing/importing 500 ppm sulfur NRLM diesel fuel. All credits expire after May 31, 2014. Hence, beginning June 1, 2014, all NRLM diesel fuel produced by refiners or imported in the U.S. will be subject to the 15 ppm sulfur standard, except LM diesel fuel produced by transmix processors from transmix can continue to meet the 500 ppm sulfur limit.

We proposed that all credits would expire May 31, 2012, however we are finalizing an expiration date of May 31, 2014 based on the comments we received. The additional two years that we are now allowing for credit use (1) will provide a longer period for refiners to sell off-specification fuel instead of having to reprocess it, (2) is an environmentally neutral change to the overall program, and (3) is now consistent with the end-date for small refiner flexibility.

While credits can be generated and traded nationwide, they are restricted from use in certain parts of the country under the provisions of this final rule. As discussed in section IV.D, we are avoiding the burden to terminals of adding marker to heating oil in those areas of the country where demand for heating oil is expected to continue to remain high after today's final rule. The NRLM diesel fuel sulfur standards will be enforced based on sulfur level in these areas, not through the refinery designation and marker provisions. Consequently, in the area defined in section IV.D comprising most of the Northeast and Mid-Atlantic region of the country, as well as in the State of Alaska, many of the fuel program's flexibilities, including refiners' ability to use credits, are not allowed. Refiners and importers may not use credits to produce or import diesel fuel with a sulfur content greater than 500 ppm beginning June 1, 2007 or 15 ppm beginning June 1, 2010, for sale or distribution in this Northeast/Mid-Atlantic area or the State of Alaska. However, credits generated in these areas can be sold to other refiners and/or importers for use outside these areas.

B. Hardship Relief Provisions for Qualifying Refiners

As in our gasoline sulfur and highway diesel fuel sulfur programs, today's program contains the following hardship relief provisions to provide regulatory flexibility to challenged refiners:

- Small refiner hardship for qualifying small refiners;
- General hardship for any refiner experiencing either—

(1) Extreme unforeseen circumstances such as natural disaster or acts of God; or

(2) Extreme hardship circumstances such as financial or technical hardship.

Similar provisions have proved invaluable for some refiners in the recent implementation of the gasoline sulfur standards, as well as for refiners' planning for the highway diesel standards. The details of these provisions are discussed below.

1. Hardship Provisions for Qualifying Small Refiners

As in previous fuel rulemakings, our justification for including provisions specific to small refiners is that, in general, small refiners generally have a degree of hardship in complying with the standards compared to other refiners. In the NPRM, we proposed flexibilities/transition provisions, or ''hardship provisions'' (these terms are equivalent), for small refiners. We are adopting the provisions that were proposed for small refiners virtually unchanged, and including similar provisions for the treatment of locomotive and marine fuel.

a. Regulatory Process and Justification for Small Refiner Relief

In developing our NRLM diesel fuel sulfur program, we evaluated the environmental need as well as the technical and financial ability of refiners to meet the 500 and 15 ppm sulfur standards as expeditiously as possible. We believe it is feasible and necessary for the vast majority of the program to be implemented in the established time frame to achieve the air quality benefits as soon as possible. Based on information available from small refiners and others, we believe that refiners classified as small generally face unique circumstances with regard to compliance with environmental programs, compared to larger refiners. Consequently, as discussed below, we are finalizing several special provisions for refiners that qualify as ''small refiners'' to reduce the disproportionate burden that today's program will have on them.

Small refiners generally lack the resources that are available to large refining companies, including those large companies that own small-capacity refineries, to raise capital for investing in desulfurization equipment, such as shifting of internal funds, securing of financing, or selling of assets. Small refiners are also likely to have more difficulty in competing for engineering and construction resources needed for the installation of the desulfurization equipment which will likely be required to meet the standards finalized in this action.

Because small refiners are more likely to face adverse circumstances with regard to regulatory compliance than larger refiners, we are finalizing interim provisions that will provide additional time for refineries owned by small

refiners to meet the sulfur standards. This approach will allow the overall program to begin as early as possible, avoiding the need for delay in order to address the ability of small refiners to comply.

i. Regulatory Flexibility Process for Small Refiners

As explained in the discussion of our compliance with the Regulatory Flexibility Act (RFA) in section X.C of this preamble, and in the Final Regulatory Flexibility Analysis in chapter 11 of the RIA, we considered the impacts of today's regulations on small businesses. Most of our analysis of small business impacts was performed as part of the Small Business Advocacy Review (SBAR) Panel convened by EPA, pursuant to the RFA as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). The Panel's final report is available in the rulemaking public docket (Docket A–2001–28, Document No. II–A–172).

For the SBREFA process, EPA conducted outreach, fact-finding, and analysis of the potential impacts of the proposed nonroad regulations on small businesses. Based on these discussions and analyses by all panel members, the Panel concluded that small refiners in general would likely experience a significant and disproportionate financial burden in reaching the objectives of the proposed nonroad diesel fuel sulfur program.

One indication of the disproportionate burden on small refiners is the relatively high cost per gallon projected for producing NRLM diesel fuel under today's program. Refinery modeling of refineries owned by refiners likely to qualify as small refiners, and of refineries owned by other non-small refiners, indicates significantly higher refining costs for small refiners. Specifically, we project that without special provisions, refining costs for small refiners on average would be about two cents per gallon higher than for other refiners in the same PADD to meet the 15 ppm sulfur standard.

The Panel also noted that the burden imposed on small refiners by the proposed sulfur standards may vary from refiner to refiner. Thus, the Panel recommended more than one type of burden mitigation so that most, if not all, small refiners could benefit. We considered the issues raised during the SBREFA process, and discussed them in the NPRM, and have decided to finalize each of the provisions recommended by the Panel. A discussion of the comments we received regarding small refiners and terminal operators, and our responses to those comments, can be found in section X.C of this preamble, and also the Summary and Analysis of Comments.

ii. Rationale for Small Refiner Regulatory Flexibility Provisions

Generally, we structured the small refiner provisions to reduce the burden on small refiners while expeditiously achieving air quality benefits and ensuring that the availability of 15 ppm sulfur NR diesel fuel will coincide with the introduction of 2011 model year nonroad diesel engines and equipment. We believe the special provisions for small refiners are necessary and appropriate for several reasons.

First, the compliance schedule for today's program, combined with special relief provisions for small refiners, will achieve the air quality benefits of the program as soon as possible, while helping to ensure that small refiners will have adequate time to raise capital for new or upgraded fuel desulfurization equipment. Most small refiners have limited additional sources of income beyond refinery earnings for financing and typically do not have the financial backing that larger and generally more integrated companies have. Therefore, additional time to accumulate capital internally or to secure capital financing from lenders can be central to their ability to comply.

Second, we recognize that while the sulfur levels in today's program can be achieved using conventional refining technologies, new technologies are also being developed that may reduce the capital and/or operating costs of sulfur removal. Thus, we believe that providing small refiners some additional time to allow for new technologies to be proven out by other refiners will have the added benefit of reducing the risks faced by small refiners. The added time will likely enable small refiners to benefit from the lower costs of these improvements in desulfurization technology (*e.g.*, better catalyst technology or lower-pressure hydrotreater technology). This will help to offset the disproportionate financial burden that may be imposed upon small refiners.

Finally, providing small refiners more time to comply will spread out the availability of engineering and construction resources. Most refiners will need to install additional processing equipment to meet the NRLM diesel fuel sulfur requirements. We anticipate that there may be significant competition for technology services, engineering resources, and construction management and labor. In addition, as has been the experience in gasoline sulfur control, vendors will be more likely to contract their services with the larger refiners first, as their projects will offer larger profits for the vendors. Temporarily delaying compliance for small refiners will spread out the demand for these resources and may help reduce cost premiums for everyone caused by limited engineering and construction supply.

We discuss below the provisions that we are finalizing to minimize the degree of hardship imposed upon small refiners by this program. With these provisions we are confident in going forward with the 500 ppm sulfur standard for NRLM diesel fuel in 2007 and the 15 ppm sulfur standard for NR diesel fuel in 2010 and for LM diesel fuel in 2012, for the rest of the industry. The provisions for small refiners will allow these refiners to continue to produce higher sulfur NRLM fuel until June 1, 2010, and similarly, will allow for the production of 500 ppm nonroad NRLM fuel until June 1, 2014. Without small refiner relief, we would have to consider delaying the overall program until the burden of the program on many small refiners was diminished, which would delay the air quality benefits of the overall program. By providing temporary relief to small refiners, we are able to adopt a program that expeditiously reduces NRLM diesel fuel sulfur levels in a feasible manner for the industry as a whole.

The four-year leadtime from which begins in 2010 for small refiners for locomotive and marine diesel fuel is identical to the relief that was supported by small refiners for nonroad diesel fuel. We believe that this relief is necessary and adequate to reduce the burden on small entities while still achieving our air quality goals. Small refineries vary considerably in their markets for NRLM diesel fuels. Consequently, the proposal to control nonroad diesel fuel to 15 ppm sulfur impacted small refiners with significant nonroad market shares, but left those with significant locomotive and marine market shares relatively untouched. With control of all NRLM diesel fuel to 15 ppm sulfur in this final rule, all small refiners of NRLM diesel fuel will face similar challenges, and therefore the same four year lead time from 2010 proposed for those small refiners impacted by nonroad fuel control alone is also appropriate when the standards are expanded to all NRLM. In essence, while more small refiners face the challenge of desulfurizing all of their diesel fuel to the 15 ppm sulfur standard, the magnitude of this challenge is not any greater. Furthermore, providing

additional relief (beyond 2014) to small refiners would undermine the program by further delaying air quality benefits. The 2014 deadline for all small refiner diesel fuel to 15 ppm sulfur will also simplify the fuel program and it will allow small refiners the ability to coordinate their plans to reduce the sulfur content of all off-highway diesel fuel at the same time.

iii. Impact of Small Refiner Options on Program Emissions Benefits

Small refiners that choose to delay the NRLM diesel fuel sulfur requirements will also delay to some extent the emission reductions that would otherwise have been achieved. However, for several reasons, the overall impact of these postponed emission reductions will be small. First, small refiners represent only a fraction of national non-highway diesel production. Today, refiners that we expect to qualify as small refiners represent only about six percent of all high-sulfur diesel production. Second, the delayed compliance provisions described below will affect only engines without new emission controls. During the program's first step to 500 ppm sulfur NRLM diesel fuel, small refiner NRLM diesel fuel could be well above 500 ppm sulfur, but the new advanced engine controls will not yet be required. During the second step to 15 ppm sulfur NRLM diesel fuel, equipment with the new controls will be entering the market, but use of the 500 ppm small refiner fuel will be restricted to older engines without the new controls. There will be some loss of sulfate PM control in the older engines that operate on higher sulfur small refiner fuel, but no effect on the major emission reductions that the new engine standards will achieve starting in 2011. Finally, because small diesel refiners are generally dispersed geographically across the country, the limited loss of sulfate PM control will also be dispersed.

One option for small refiner relief will allow a modest 20 percent relaxation in the gasoline sulfur interim standards for small refiners that produce all of their NRLM diesel fuel at 15 ppm sulfur by June 1, 2006. To the extent that small refiners elect this option, a small loss of emission control from Tier 2 gasoline vehicles that use the higher sulfur gasoline could occur. We believe that such a loss of control will be very small. Very few small refiners will be in a position to use this provision. Further, the relatively small production of gasoline with slightly higher sulfur levels should have no measurable impact on the emissions of new Tier 2 vehicles, even if the likely ''blending down'' of sulfur levels does not occur as this fuel mixed with lower sulfur fuel during distribution. This provision will also maintain the maximum 450 ppm gasoline sulfur per-gallon cap standard in all cases, providing a reasonable sulfur ceiling for any small refiners using this provision.

b. Small Refiner Definition for Purposes of the Hardship Provisions

The definition of small refiner under the NRLM diesel program is similar to the definitions under the Tier 2/ Gasoline Sulfur and Highway Diesel rules. Under the NRLM program, a small refiner must demonstrate that it meets the following criteria:

- Produced NRLM diesel from crude;
- No more than 1,500 employees corporate-wide, based on the average number of employees for all pay periods from January 1, 2002 to January 1, 2003; and,
- A corporate crude oil capacity less than or equal to 155,000 barrels per calendar day (bpcd) for 2002.

As with the earlier fuel sulfur programs, the effective dates for the determination of employee count and for calculation of the crude capacity represent the most recent complete year prior to the issuing of the proposed rulemaking (2002, in this case).

In determining its total number of employees and crude oil capacity, a refiner must include the number of employees and crude oil capacity of any subsidiary companies, any parent company and subsidiaries of the parent company, and any joint venture partners. We define a subsidiary of a company to mean any subsidiary in which the company has a 50 percent or greater ownership interest. However, refiners owned and controlled by an Alaska Regional or Village Corporation organized under the Alaska Native Claims Settlement Act (43 U.S.C. 1626), are also eligible for small refiner status, based only on the refiner's employees and crude oil capacity. Such an exclusion is consistent with our desire to grant regulatory relief to that part of the industry that is the most challenged with respect to regulatory compliance. We believe that very few refiners, probably only one, will qualify under this provision. We are also incorporating this exclusion into the small refiner provisions of the highway diesel and gasoline sulfur rules, which did not address this issue.

As under the gasoline sulfur and highway diesel fuel rules, refiners that either acquire or restart a refinery in the future may be eligible for small refiner status under the NRLM program. Specifically, a refiner that either acquires or restarts a refinery that was shut down or non-operational between January 1, 2002 and January 1, 2003 may apply for small refiner status. In such cases, we will judge eligibility under the employment and crude oil capacity criteria based on the most recent 12 consecutive months of data unless we conclude from the data provided by the refiner that another period of time is more appropriate. Companies with refineries built after January 1, 2002 are not eligible for the small refiner provisions. Similarly, entities that do not own or operate a refinery are not eligible to apply for small refiner status.

c. Provisions for Small Refiners

We are finalizing several provisions intended to reduce the regulatory burden of today's program on small refiners as well as to encourage their early compliance whenever possible. As described below, these small refiner relief options consist of additional time for compliance and, for small refiners that choose to comply earlier than required, the option of either generating diesel fuel sulfur credits or receiving a limited relaxation of their gasoline sulfur standards.

i. NRLM Delay Option

First, we are finalizing an option that allows small refiners to postpone their compliance with the NRLM diesel fuel sulfur standards. The delayed compliance schedule for small refiners is intended to compensate for the relatively higher compliance burdens on these refiners. It is not intended as an opportunity for those refiners to greatly expand their production of uncontrolled diesel fuel (2007–2010) or 500 ppm sulfur diesel fuel (2010–2014). To help ensure that any significant expansion of refining capacity that a small refiner might undertake in the future is accompanied by an expansion of desulfurization capacity, small refiners producing higher sulfur fuel must limit their production to baseline volume levels. Specifically, during the first step of today's diesel fuel program to 500 ppm sulfur, from June 1, 2007 through May 31, 2010, a small refiner may at any or all of its refineries produce uncontrolled NRLM diesel fuel up to the 2003 through 2005 non-highway baseline volume for the refinery(s). Any diesel fuel produced over the baseline volume will be subject to the 500 ppm sulfur standard applying to other refiners. Similarly, from June 1, 2010 through May 31, 2014, a small refiner may produce at any or all of its refineries NRLM diesel fuel subject to

the 500 ppm sulfur standard at a volume equal to or less than the refineries' 2006–2008 non-highway baseline volumes. LM fuel produced to the 500 ppm standard during 2010 to 2012 would be counted towards meeting this baseline volume. NRLM fuel produced in excess of the baseline volume will be subject to the 15 ppm sulfur NRLM diesel fuel standard. The baseline for 2003–2005 will be determined by subtracting the refinery's highway volume from its total highway and heating oil volume production. The baseline for 2006–2008 will be determined based upon the volume of the refinery's NRLM fuel designations discussed in section IV.D.

As discussed in section IV.D, the costs to the distribution system to mark heating oil in areas of PADD 1 with high heating oil demand to distinguish it from small refiner or credit-using high sulfur NRLM made this option undesirable in these areas. Based on our review of anticipated small refiner situations, this portion of PADD 1 appears unlikely to provide a meaningful market for small refiners seeking this option. Therefore, in this part of the country it imposed costs without providing the intended benefit. Consequently, while this option was proposed to be available nationwide, we are not finalizing it for a portion of PADD 1. This change from the proposal should have no meaningful impact on small refiners' flexibility, but will reduce the costs for fuel distributors.

Since new engines with sulfur sensitive emission controls will begin to become widespread beginning in 2011, small refiner fuel can only be sold for use in pre-2011 nonroad equipment or in locomotives or marine engines during this time. Section IV.D below discusses the requirements for designating and tracking the production of 500 ppm sulfur NRLM diesel fuel produced by small refiners during this period.

The following table illustrates the small refiner NRLM diesel fuel sulfur standards as compared to the standards for the base NRLM diesel fuel program. As previously stated, small refiners will receive additional lead time, compared to non-small refiners for 15 ppm sulfur locomotive and marine diesel fuel. This lead time is identical to that which had been proposed for 15 ppm sulfur nonroad diesel fuel. This will ensure that emission benefits of ultra low sulfur diesel fuel are achieved as soon as possible, and should not significantly change the nature or magnitude of the burden on affected small refiners.

TABLE IV–4.—SMALL REFINER NRLM DIESEL FUEL SULFUR STANDARDS, PPM [A]

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015+
Non-Small Refiners–NR fuel	.....	500	500	500	15	15	15	15	15	15
Non-Small Refiners–LM fuel	.....	500	500	500	500	500	15	15	15	15
Small Refiners–NR diesel fuel	.....	.....	.....	.....	500	500	500	500	15	15
Small Refiners–LM diesel fuel	.....	.....	.....	.....	500	500	500	500	15	15

Notes: [a] New standards will take effect on June 1 of the applicable year.

ii. NRLM Credit Option

Some small refiners have indicated that, for a variety of reasons, they might need to produce fuel meeting the NRLM diesel fuel sulfur standards earlier than required under the small refiner program described above. For some small refiners, the distribution system might limit the number of grades of diesel fuel that will be carried. Others might find it economically advantageous to make 500 ppm or 15 ppm sulfur NRLM diesel fuel earlier than required to prevent losing market share. At least one small refiner has indicated that it might decide to desulfurize its NRLM pool at the same time as it desulfurizes its highway diesel fuel, in June 2006, due to limitations in its distribution system and to take advantage of economies of scale.

The NRLM Credit option allows small refiners to participate in the NRLM diesel fuel sulfur credit banking and trading program discussed earlier in this section. Under this option, a small refiner may generate diesel fuel sulfur credits by producing any volume of 500 ppm sulfur NRLM diesel fuel from crude oil prior to from June 1, 2006 through May 31, 2010, and by producing any volume from crude oil of 15 ppm sulfur NRLM diesel fuel from June 1, 2010 through December 31, 2013. The specifics of the credit program are described in section IV.A.4, including how the program applies to small refiners. Generating and selling credits could provide small refiners with funds to help defray the costs of early NRLM compliance.

iii. NRLM/Gasoline Compliance Option

The NRLM/Gasoline Compliance option is available to small refiners that produce greater than 95 percent of their NRLM diesel fuel at the 15 ppm sulfur standard by June 1, 2006 and elect not to use the provision described above to earn NRLM diesel fuel sulfur credits for this early compliance. Refiners choosing this option will receive a modest revision in their small refiner interim gasoline sulfur standards, beginning January 1, 2004. Specifically, the applicable small refiner annual average and per-gallon cap gasoline sulfur standards will be increased by 20 percent for the duration of the interim program. The interim program is through either 2007 or 2010, depending on whether the refiner extended the duration of its interim gasoline sulfur standards by producing 15 ppm sulfur highway diesel fuel by June 1, 2006, as provided under 40 CFR 80.552(c). In no case may the per-gallon gasoline sulfur cap exceed 450 ppm, the highest level allowed under the gasoline sulfur program.

We believe it is very important to link any relaxation of a small refiner's interim gasoline sulfur standards with the environmental benefit of early desulfurization of a significant volume of NRLM diesel fuel. As such, a small refiner choosing to use this option must produce a minimum volume of NRLM diesel fuel at the 15 ppm sulfur standard by June 1, 2006. Each participating small refiner must produce a volume of 15 ppm sulfur fuel that is at least 85 percent of the annual average volume of non-highway diesel fuel it produced from 2003–2005. If the refiner began to produce gasoline in 2004 at the higher interim standard under this provision but then either fails to meet the 15 ppm sulfur standard for its NRLM diesel fuel by June 1, 2006 or fails to meet the 85 percent minimum volume requirement, the original small refiner interim gasoline sulfur standard applicable to that refiner will automatically apply retroactively to 2004. In addition, the refiner must compensate for the higher gasoline sulfur levels by purchasing gasoline sulfur credits or producing an equivalent volume of gasoline below the required sulfur levels. Under this option, a small refiner could in effect shift some funds from its gasoline sulfur program to accelerate desulfurization of

NRLM diesel fuel. While there would be a small potential loss of emission reduction under the gasoline sulfur program from fuel produced by the very few small refiners that we believe would choose this second option, there are also environmental benefits gained from the production of 15 ppm sulfur diesel fuel earlier than otherwise required.

iv. Relationship of the Options to Each Other

A small refiner may choose to use the NRLM Delay option, the NRLM Credit option or both in combination, since it has no requirement to produce 500 ppm sulfur NRLM diesel fuel before June 1, 2010, or 15 ppm sulfur NRLM diesel fuel before June 1, 2014. Thus any fuel that it produces from crude at or below the sulfur standards earlier than required will qualify for generating credits.

On the other hand, the NRLM/Gasoline Compliance option may not be used in combination with either the NRLM Delay option or the NRLM Credit option, since a small refiner must produce at least 85 percent of its NRLM diesel fuel at the 15 ppm sulfur standard under the NRLM/Gasoline Compliance option.

d. How Do Refiners Apply for Small Refiner Status?

A refiner applying for small refiner status must provide the Agency with several types of information by December 31, 2004. The detailed application requirements are summarized in section V.F.2 below. In general, a potential small refiner must own the refinery/refineries in question and must provide the following information for the parent company and all subsidiaries at all locations: (1) The average number of employees for all pay periods from January 1, 2002 through January 1, 2003; (2) the total corporate crude oil capacity, which must be a positive number; and (3) an indication of which small refiner option the refiner intends to use (see section IV.B.1.c above). As with applications for relief under other fuel programs, applications for small refiner status under this rule that are later found to contain false or inaccurate information will be void *ab initio*.

e. The Effect of Financial and Other Transactions on Small Refiner Status and Small Refiner Relief Provisions

Since the gasoline sulfur and highway diesel fuel sulfur programs were finalized, several refiners have raised concerns about how various financial and other transactions could affect implementation of the small refiner fuel sulfur provisions. These types of transactions typically involve refiners with approved small refiner status that are involved in potential or actual sales of the small refiner's refinery, or involve the small refiner merging with another refiner or purchasing another refinery (or other non-refining asset). We believe that these concerns are also relevant to the small refiner provisions described below for the NRLM diesel fuel sulfur program.

i. Large Refiner Purchasing a Small Refiner's Refinery

The first type of transaction involves a ''non-small'' refiner that wishes to purchase a refinery owned by an approved small refiner. In some cases, the small refiner may not have completed or even begun refinery upgrades to meet the long-term fuel sulfur standards if it was using an interim small refiner compliance provision. Under the gasoline sulfur and highway diesel fuel sulfur programs, once such a purchase transaction is completed, the ''non-small'' buyer does not have the benefit of the small refiner relief provisions that had applied to the previous owner.

The purchasing refiner would have to perform the necessary upgrades on the acquired refinery for it to meet the ''non-small'' sulfur standards. As the gasoline sulfur and highway diesel fuel sulfur provisions existed prior to today's action, such a refiner would be left with very little or, in the case of the gasoline sulfur program which has already begun, no lead time to bring the refinery into compliance. The refiners that have raised this issue have claimed that refiners in this situation would not be able to immediately comply with the ''non-small refiner'' standards upon acquisition of the new refinery. These refiners claim that this could prevent them from purchasing a refinery from a small refiner and, as a result, this would severely limit the ability of small refiners to sell such an asset. The refiners that raised this issue requested additional lead time before the non-small refiner sulfur standards take effect.

We received comments on this issue from two refiners. Both refiners commented that lead time for refiners losing their small refiner status should only be allowed for the case where a small refiner merges with, or acquires, another small refiner. Neither refiner supports allowing additional lead time for a large refiner that merges with or acquires a small refiner. In addition, these refiners also commented that it would be inappropriate to allow a small refiner that receives this lead time to be able to generate credits for ''early'' production of lower sulfur diesels during this two-year period.

Nevertheless, we continue to believe these lead-time concerns are valid. Failure to address them could lead to unnecessary disruption to the diesel fuel market. Therefore, we are adopting a provision to provide an appropriate period of lead time for compliance with the NRLM diesel fuel sulfur requirements for situations in which a refiner purchases any refinery owned by a small refiner, whether by purchase of the refinery or purchase of the small refiner entity. Refiners that acquire a refinery from an approved small refiner will be provided 30 additional months from the date of the completion of the purchase transaction (but no later than June 1, 2010 for 500 ppm NRLM fuel and June 1, 2014 for 15 ppm NRLM fuel). During this interim period, production at the newly-acquired refinery may remain at the interim sulfur levels that applied to that refinery for the previous small refiner owner under the small refiner options discussed below. At the end of this period, the refiner must comply with the ''non-small refinery'' sulfur standards.

We received comments suggesting that the proposed 24 months of additional lead time would not be adequate, and further, discussions with several refiners indicated that in most cases, 24 months would be inadequate. As discussed in section IV.F, we project a range of 27–39 months is needed to design and construct a diesel hydrotreater. Therefore, in order to allow a reasonable opportunity for complying, we are finalizing the provision that 30 months of additional lead time will be afforded. Thirty months should in most cases be sufficient for the new refiner-owner to accomplish the necessary engineering, permitting, construction, and start-up of the necessary desulfurization equipment. However, if there are instances where the technical characteristics of its planned desulfurization project will require additional lead time, we have included provisions for the refiner to apply for up to six months of additional time and for EPA to consider such requests on a case-by-case basis. Such an application must be based on the technical factors supporting the need for more time and should include detailed technical information and projected schedules for engineering, permitting, construction, and startup. Based on information provided in such an application and other relevant information, EPA will decide whether additional time is

technically necessary and, if so, how much additional time is appropriate. However, we anticipate that in most cases 30 months will be sufficient, since developing plans for compliance should be expected to be a part of any purchase decision.

All existing small refiner provisions and restrictions, as described below, will also remain in place for that refinery during the 30 months of additional lead time and any further lead time approved by EPA for the purchasing refiner; including the per-refinery volume limitation on the amount of NRLM diesel that may be produced at the small refiner standards. Furthermore, since the purpose of this grace period is solely to provide time to bring the refinery into compliance with the NRLM standards, refiners will not be allowed to generate credits for early compliance during this 30 month period. There will be no adverse environmental impact of this provision, since the small refiner would have already been provided this same relief prior to the purchase and this provision is no more generous.

ii. Small Refiner Losing Its Small Refiner Status Due To Merger or Acquisition

Another type of transaction involves a refiner with approved small refiner status that later loses its small refiner status because it exceeds the small refiner criteria. Under the gasoline sulfur and highway diesel fuel sulfur regulations, an approved small refiner that exceeds 1,500 employees due to merger or acquisition will lose its small refiner status. We also intended for refiners that exceeded the 155,000 barrel per calendar day crude capacity limit due to merger or acquisition to lose its small refiner status and in this rule we are amending the regulations to reflect that criterion as well. This includes exceedances of the employee or crude capacity criteria caused by acquisitions of assets such as plant and equipment, as well as acquisitions of business entities.

Our intent in the gasoline and highway diesel fuel sulfur programs, as well as the NRLM diesel fuel sulfur program, has been and continues to be, limiting the small refiner relief provisions to a small subset of refiners that are challenged, as discussed above. At the same time, it is also our intent to avoid stifling normal business growth. Therefore, the regulations we are adopting today will disqualify a refiner from small refiner status if it exceeds the small refiner criteria through its involvement in transactions such as being acquired by or merging with another entity, through the small refiner itself purchasing another entity or assets from another entity, or when it ceases to process crude oil. However, an approved small refiner who exceeds the employee or crude oil capacity criteria without merger or acquisition, may retain its small refiner status for the purposes of the complying with the NRLM diesel fuel standards. Furthermore, in the sole case of a merger between two approved small refiners we will allow such refiners to retain their small refiner status for purposes of complying with the NRLM diesel fuel program. Commenters explained that additional financial resources would not typically be provided in the case of a merger between small refiners. In light of these comments, we believe the justification for continued small refiner relief for the merged entity is valid. Small refiner status for the two entities of the merger will not be affected, hence the original compliance plans of the two refiners should not be impacted. Moreover, no environmental detriment will result from the two small refiners maintaining their small refiner status within the merged entity as they would have likely maintained their small refiner status had the merger not occurred.

Consistent with our intent in the gasoline sulfur and highway diesel fuel sulfur programs to limit the use of the small refiner hardship provisions, we also intended in the gasoline sulfur and highway diesel fuel sulfur programs that an exceedance of corporate crude oil capacity limit of 155,000 bpcd, due to merger or acquisition, would be grounds for disqualifying a refiner's small refiner status. However, we inadvertently failed to include this second criterion as grounds for disqualification in the regulations. In today's action, we are resolving this error by including the crude capacity limit, along with the employee limit for both the gasoline sulfur and highway diesel fuel sulfur programs, effective January 1, 2004. Thus, a refiner exceeding either criterion due to merger or acquisition will lose its small refiner status. The exception to this would be in the case of merger only between two small refiners. We received comments supporting the allowance of additional lead time for small refiners that lose their small refiner status through a merger with, or acquisition of, another small refiner.

We recognize that a small refiner that loses its small refiner status because of a merger with, or acquisition of, a non-small refiner would face the same type of lead time concerns in complying with the non-small refiner standards as a non-small refiner that acquired a small refiner's refinery would. Therefore, the additional lead time described above for non-small refiners purchasing a small refiner's refinery will also apply to this situation. Thus, this 30 month lead time will apply to all of the refineries, existing or newly-purchased, that had previously been subject to the small refiner program, but would not apply to a newly-purchased refinery that is subject to the non-small refiner standards. Again, there would be no adverse environmental impact because of the pre-existing relief provisions that applied to the newly-purchased small refiner.

The issues discussed in this section apply equally to the gasoline sulfur and highway diesel fuel sulfur programs. Thus, we are also adopting the same provisions relating to additional lead time in cases of certain financial, or other, transactions for the small refiner programs in the earlier fuel sulfur programs.

In the proposal for today's final rule, we invited comment on several other related provisions that were considered during the development of this rulemaking:

(1) Instead of merely allowing small refiners a grace period to come into compliance if they lose their small refiner status, we also asked for comment on whether or not such a small refiner should instead be allowed to ''grandfather'' the small refiner relief provisions for its existing refinery or refineries. We did not receive any specific comments on this issue and we are not finalizing this provision in today's action.

(2) Regarding small refiners that exceed the small refiner criteria due to the purchase of a non-small refiner's refinery, we requested comment on whether or not the proposed additional lead time should apply to the purchased refinery. We also requested comment on whether or not the refiner should be required to meet the non-small refiner standards on schedule at the purchased refinery, since the previous owner could be assumed to have anticipated the new standards and taken steps to accomplish this prior to the purchase. One refiner commented that merger acquisition flexibility for refineries that lose their small refiner status should be limited to instances where a small refiner merges with another small refiner. They believed that any small refiner that loses its small refiner status due to an acquisition of a non-small refiner's refinery should not be eligible for hardship relief. Similarly, another refiner commented that a refiner should not retain small refiner status if it has

the financial resources to acquire additional refineries that increase corporate-wide crude processing above 155,000 bpd. We are not adopting any flexibility for the purchased refinery in this situation (except in the case of a merger between two small refiners, as discussed above).

f. Provisions for Approved Gasoline and Highway Diesel Fuel Small Refiners That Do Not Qualify for Small Refiner Status Under Today's Program

Some refiners that have approved small refiner status under the gasoline sulfur and highway diesel fuel programs may not qualify for small refiner status under today's program if they have grown through normal business operations and now exceed the qualification criteria for NRLM small refiner status. One refiner commented on the lack of a ''grandfather'' provision in the nonroad proposal that would automatically continue small refiner status to refiners already approved as small refiners under the gasoline and highway diesel fuel sulfur programs. Without such a provision some refiners could be approved small refiners under the gasoline sulfur and highway diesel fuel sulfur programs (because they grew through normal business expansions and not through merger or acquisition) but would not qualify under the NRLM program because they now exceed the criteria. As a consequence, the commenter argued that in some cases benefits afforded to such small refiners under the gasoline and highway diesel fuel sulfur programs could be negated. Specifically, under the highway diesel rule they were allowed until 2010 before needing to have diesel fuel hydrotreating capacity. Under the nonroad rule, they would have to do so in 2007. Since it would only make sense to invest for adequate 15 ppm capacity when they do invest, the nonroad standards essentially would require them to invest to bring all highway and nonroad diesel to 15 ppm sulfur in 2007, eliminating the flexibility granted them in the highway rule. Furthermore, the refiners' clean fuel projects for low sulfur gasoline, highway diesel fuel, and NRLM diesel fuel could no longer be staggered. In fact, small refiners in such situations would be required to make investments for compliance with all three fuel programs in the same three to four year period, if not virtually all at once.

We believe that a refiner who no longer meets the criteria for small refiner status, since it has successfully grown through normal business operations, does not face the same level of hardship described earlier in this section. We do not intend for the NRLM program to undermine the benefits afforded to small refiners under the gasoline and highway diesel fuel sulfur programs, as described in the comments. At the same time, however, we want to preserve small refiner status under today's program only for those businesses that meet the criteria described above. Under the nonroad proposal, a refiner with approved small refiner status under the highway diesel fuel program but not the NRLM program would be required to produce 500 ppm sulfur NRLM diesel fuel in 2007 and both 15 ppm sulfur highway and NR diesel fuel in 2010. Under today's final program, such a refiner may instead skip the 2007 500 ppm interim sulfur standard for its NRLM diesel fuel, and meet the 15 ppm sulfur standard for both its highway and NR diesel fuel in 2010 and LM diesel fuel in 2012. Such an approach will maintain the refiner's flexibility under the highway program by allowing it to delay diesel hydrotreating investment until 2010, while limiting its flexibility under the nonroad diesel program.

g. Additional Provisions and Program Elements

To reduce the burden on all refiners (including small refiners), we have chosen to finalize the designate and track approach, rather than the baseline approach. Discussions with parties in all parts of the distribution system led us to believe that this is the preferred approach, as tracking is currently done by parties throughout the distribution system. We are also finalizing provisions to simplify the segregation, marking, and dyeing requirements. In addition, we are finalizing provisions to alleviate the concern raised by small terminal operators regarding the heating oil marker. Terminals in parts of PADD 1 (Northeast/Mid-Atlantic Area) will not have to add the marker to home heating oil. Therefore we expect that no terminals inside of the Northeast/Mid-Atlantic Area will need to install injection equipment. These provisions are discussed in greater detail in section IV.D, below.

2. General Hardship Provisions

a. Temporary Waivers From NRLM Diesel Fuel Sulfur Requirements in Extreme Unforseen Circumstances

We are finalizing a provision which, at our discretion, will permit any domestic or foreign refiner to seek a temporary relief from the NRLM diesel fuel sulfur standards under certain rare circumstances. This waiver provision is similar to provisions in the reformulated gasoline, low sulfur gasoline, and highway diesel fuel sulfur regulations. It is intended to provide refiners short-term relief due to unanticipated circumstances, such as a refinery fire or a natural disaster, that cannot be reasonably foreseen now or in the near future.

Under this provision, a refiner may seek a waiver to distribute NRLM diesel fuel that does not meet the applicable 500 ppm or 15 ppm sulfur standards for a brief time period. An approved waiver of this type could, for example, allow a refiner to produce and distribute diesel fuel with higher than allowed sulfur levels, so long as the other conditions described below were met. Such a request must be based on the refiner's inability to produce complying NRLM diesel fuel because of extreme and unusual circumstances outside the refiner's control that could not have been avoided through the exercise of due diligence. The request must also show that other avenues for mitigating the problem, such as the purchase of credits to be used toward compliance, had been pursued yet were insufficient. As with other types of regulatory relief established in this rule, this type of temporary waiver will have to be designed to prevent fuel exceeding the 15 ppm sulfur standard from being used in 2011 and later model year nonroad engines.

The conditions for obtaining a NRLM diesel fuel sulfur waiver are similar to those under the RFG, gasoline sulfur, and highway diesel fuel sulfur regulations. These conditions are necessary and appropriate to ensure that any waivers that are granted are limited in scope, and that refiners do not gain economic benefits from a waiver. Therefore, refiners seeking a waiver will be required to show that the waiver is in the best public interest and that they: (1) Were not able to avoid the nonconformity; (2) will make up the air quality detriment associated with the waiver; (3) will make up any economic benefit from the waiver; and (4) will meet the applicable diesel fuel sulfur standards as expeditiously as possible.

b. Temporary Relief Based on Extreme Hardship Circumstances

In addition to the provision for short-term relief under extreme unforseen circumstances, we are finalizing a provision for relief based on extreme hardship circumstances such as circumstances that impose extreme hardship and significantly affect a refiners ability to comply with the program requirements by the applicable dates. This provision is also very similar to those established under the gasoline

sulfur and highway diesel fuel sulfur programs. Under the gasoline sulfur program, we have granted relief in the form of individual compliance plans to five refiners. Under the highway diesel program, we have approved two. Each plan was designed for the specific situation of that refiner. In all cases, the companies would have experienced severe hardship if temporary relief had not been granted. Moreover, some refineries were at a high risk of shutting down without the relief.

In developing today's program, as under our other fuel programs, we considered whether any refiners would face particular difficulty in complying with the standards in the lead time provided. As described earlier in this section, we concluded that, in general, small refiners would experience more difficulty in complying with the standards on time because they have less ability to raise the capital necessary for refinery investments, face proportionately higher costs because of poorer economies of scale, and are less able to successfully compete for limited engineering and construction resources. However, it is possible that other refiners that are not small refiners may also face particular difficulty in complying on time with the sulfur standards required under today's program. Therefore, we are including in this rulemaking a provision which allows us, at our discretion, to grant temporary waivers from the NRLM diesel fuel sulfur standards based on a showing of extreme hardship circumstances.

The extreme hardship provision allows any domestic or foreign refiner to request relief from the sulfur standards based on a showing of unusual circumstances that result in extreme hardship and significantly affect a refiner's ability to comply with either the 500 ppm or 15 ppm sulfur NRLM diesel fuel standards by either June 1, 2007, June 1, 2010, or June 1, 2012, respectively. The Agency will evaluate each application on a case-by-case basis, considering the factors described below. Approved hardship applications may include compliance plans with relief similar to the provisions for small refiners, which are described in detail above in section IV.B.1.c. Depending on the refiner's specific situation, such approved delays in meeting the sulfur requirements may be more stringent than those allowed for small refiners, but will not likely be less stringent. Given such an approval, we expect to impose appropriate conditions to: (1) Assure the refiner is making its best effort; and (2) minimize any loss of emissions benefits from the program. As with other relief provisions established in this rule, any waiver under this provision will be designed to prevent fuel exceeding the 15 ppm sulfur standard from being used in 2011 and later model year nonroad engines.

Providing short-term relief to those refiners that need additional time because they face hardship circumstances facilitates adoption of an overall program that reduces NRLM diesel fuel sulfur to 500 ppm beginning in 2007, and NRLM diesel fuel sulfur to 15 ppm in 2010 and 2012, for the majority of the industry. However, we do not intend for this waiver provision to encourage refiners to delay the planning and investments they would otherwise make. We do not expect to grant temporary waivers that apply to more than approximately one percent of the national NRLM diesel fuel pool in any given year.

The regulatory language for today's action includes a list of the information that must be included in a refiner's application for an extreme hardship waiver. If a refiner fails to provide all of the information specified in the regulations as part of its hardship application, we will deem the application void. In addition, we may request additional information as needed. Our experience to date shows that detailed technical and financial information from the companies seeking relief has been necessary to fully evaluate whether a hardship situation exists. The following are some examples of the types of information that must be contained in an application:

—The crude oil refining capacity and fuel sulfur level(s) of each diesel fuel product produced at each of the refiner's refineries.
—A technical plan for capital equipment and operating changes to achieve the NRLM diesel fuel sulfur standards.
—The anticipated timing for the overall project the refiner is proposing and key milestones to ultimately produce 100 percent of NRLM diesel fuel at the 15 ppm sulfur cap.
—The refiner's capital requirements for each step of its proposed projects.
—Detailed plans for financing the project and financial statements demonstrating the nature of and degree of financial hardship and how the requested relief would mitigate this hardship. This would include a description of the overall financial situation of the company and its plans to secure financing for the desulfurization project (*e.g.*, internal cash flow, bank loans, issuing of bonds, sale of assets, or sale of stock).
—A plan demonstrating how the refiner would achieve the standards as quickly as possible, including a timetable for obtaining the necessary capital, contracting for engineering and construction resources, obtaining any necessary permits, and beginning and completing construction.
—A description of the market area for the refiner's diesel fuel products.
—In some cases, it could also include a compliance plan for how the refiner's diesel fuel will be segregated through to the end-user and information on each of the end-users to whom its fuel is delivered.

We will consider several factors in our evaluation of any hardship waiver applications that we receive. Such factors include whether a refinery's configuration is unique or atypical; the proportion of non-highway diesel fuel production relative to other refinery products; whether the refiner, its parent company, and its subsidiaries are faced with severe economic limitations and steps the refiner has taken to attempt to comply with the standards, including efforts to obtain credits towards compliance. In addition, we will consider the total crude oil capacity of the refinery and its parent or subsidiary corporations, if any, in assessing the degree of hardship and the refiner's role in the diesel market. Finally, we will consider where the diesel fuel is intended to be sold in evaluating the environmental impacts of granting a waiver. Typically, because of EPA's comprehensive evaluation of both financial and technical information, action on hardship applications can take six or more months.

This extreme hardship provision is intended to address unusual circumstances that should be apparent now or could emerge in the near future. Thus, refiners seeking additional time under this provision must apply for relief by June 1, 2005, although we retain the discretion to consider hardship applications later as well for good cause.

3. Provisions for Transmix Facilities

In the petroleum products distribution system, certain types of interface mixtures in product pipelines cannot be added in any significant quantity to either of the adjoining products that produced the interface. These mixtures are known as ''transmix.'' The pipeline and terminal industry's practice is to transport transmix via truck, pipeline, or barge to a facility with an on-site fractionator that is designed to separate the products. The owner or operator of such a facility is called a ''transmix

processor.'' Such entities are generally considered to be a refiner under existing EPA fuel regulations.

Transmix processors, like conventional refiners, are also currently subject to the ''80 percent/20 percent'' production requirement for 15 ppm and 500 ppm sulfur highway diesel fuel. This requirement, however, is inconsistent with the inherent nature of the transmix processors' business. Unlike conventional refiners, transmix processors refine batches of fuel that vary in volume and timing—largely unpredictably. Complying with set percentages of different highway diesel fuel sulfur grades would be very difficult, probably resulting in either a need to purchase credits or to postpone processing of some shipments. Transmix processors commented that it would not be appropriate to have any additional restrictions, beyond those based on sulfur content, imposed on their ability to market the fuel that they produce. They stated that the implementation of other restrictions, such as those under the highway diesel program's 80/20 requirement, would force them to ship large volumes of blendstocks back to refineries by truck, resulting in tank lock-outs that could cascade upstream though the distribution system potentially interfering with pipeline operations. [103]

Furthermore, transmix processors do not have the ability to change the nature of their products, as their processing equipment consists only of a distillation column to separate the blendstocks. This simple refinery configuration further limits their ability to install and operate a distillate hydrotreater. The commenters added that the sulfur content of the slate of fuel products that they produce is completely dependant on feed material that they receive, and that it is not feasible for them to install desulfurization equipment. We agree that it is not feasible for transmix processors to alter the sulfur content of the fuels that they produce and that limiting the market for these fuels could potentially lead to disruptions in the fuel distribution system.

In light of this disproportionate burden on transmix processors, today's final rule removes the restriction on the volume of highway or NRLM diesel fuel they produce, if they produce diesel fuel according to typical operational practices involving the separation of transmix and not, for example, by blending of blendstocks or processing crude or heavy oils. Therefore, under today's final rule, transmix processors may choose to continue to produce all of their highway diesel fuel to the 500 ppm sulfur standard until 2010. They may further choose to continue to produce all of their NRLM diesel fuel as high sulfur diesel fuel until June 1, 2010, all of their NRLM diesel fuel to the 500 ppm sulfur standard until June 1, 2014, and all of their LM diesel fuel to a 500 ppm sulfur limit indefinitely.

Transmix processors will be required to properly designate their fuel with the proper PTDs. Because the volume of fuel involved will be small and the fuel processed will already have been off-specification, we believe that providing this flexibility for transmix processors will have essentially no environmental impact and will not affect the efficient functioning of the NRLM diesel fuel program or the existing highway diesel fuel program. Rather, this approach will allow fuel volume to remain in the highway, NRLM, or LM (as applicable based on time frame) markets that might otherwise be forced into the heating oil market.

C. Special Provisions for Alaska and the Territories

1. Alaska

The nationwide engine emission standards established today apply to all NR engines throughout Alaska. The nationwide NRLM diesel fuel sulfur standards and implementation dates apply to NRLM diesel fuel used in the areas of Alaska served by the federal aid highway system (FAHS). In this final rule, EPA is not finalizing fuel sulfur standards and implementation deadlines for NRLM diesel fuel used in the areas of Alaska not served by the FAHS (*i.e.*, the ''rural'' areas). They will be addressed in a separate rulemaking to allow EPA to address the requirements for highway and NRLM diesel fuel in the rural areas in the same rulemaking. This final rule does, however, adopt the prohibition in the rural areas on the use of high sulfur (greater than 15 ppm) diesel fuel in model year 2011 and later nonroad engines, which will be manufactured to operate on ultra-low sulfur diesel fuel.

a. How Do the Highway Diesel Engine Standards, the Highway Diesel Fuel Standards, and Implementation Deadlines Apply in Alaska?

Unlike the rest of the nation, Alaska is currently exempt from the 500 ppm sulfur standard for highway diesel fuel and the dye provisions for diesel fuel not subject to this standard. Since the beginning of the 500 ppm sulfur highway diesel fuel program, we have granted Alaska exemptions from both the sulfur standard and dye provisions because of its unique geographical, meteorological, air quality, and economic factors. [104] On December 12, 1995, Alaska submitted a petition for a permanent exemption for all areas of the state served by the FAHS, that is, those areas previously covered only by a temporary exemption. While considering that petition, we started work on a nationwide rule to consider more stringent highway diesel fuel requirements for sulfur content.

In the January 18, 2001, highway diesel rule EPA fully applied the 2007 motor vehicle engine emission standards in Alaska. Based on factors unique to Alaska, we provided the state with: (1) An extension of the exemption from the 500 ppm sulfur fuel standard until the effective date of the new 15 ppm sulfur standard for highway diesel fuel in 2006; (2) an opportunity to request an alternative implementation plan for the 15 ppm sulfur diesel fuel program; and (3) a permanent exemption from the diesel fuel dye provisions. In response to these provisions in our January 18, 2001, highway rule, Alaska informed us that areas served by the FAHS, *i.e.*, communities on the connected road system or served by the Alaska state ferry system (''urban'' areas), would follow the nationwide requirements. [105] Diesel fuel produced for use in areas of Alaska served by the FAHS will therefore be required to meet the same requirements for highway diesel fuel as diesel fuel produced for the rest of the nation. For the rural parts of the state—areas not served by the FAHS—Alaska requested that highway diesel fuel not be subject to the highway diesel fuel sulfur standard until June 1, 2010. Between 2006 and 2010, the rural communities would choose their own fuel management strategy, except that all 2007 model year and newer diesel vehicles would require ultra-low sulfur diesel fuel. Beginning June 1, 2010, all highway diesel fuel in the rural areas would be subject to the 15 ppm sulfur highway diesel fuel sulfur standard. [106]

[103] In a tank lock out situation a storage tank can no longer accept product from upstream in the distribution system because there is not sufficient outlet for the product it holds. A tank lock our downstream can quickly propagate upstream.

[104] Copies of information regarding Alaska?s petition for exemption, subsequent requests by Alaska, public comments received, and actions by EPA are available in public docket A–96–26.

[105] Letter and attached document to Jeffrey Holmstead of EPA from Michele Brown of the Alaska Department of Environmental Conservation, dated April 1, 2002. The communities on the connected road system or served by the Alaska State ferry system are listed in the attached document.

[106] Letter and attached document to Jeffrey Holmstead of EPA from Ernesta Ballard of the

Continued

EPA intends to propose and request comment on an amendment to the highway diesel sulfur rule to incorporate the rural area transition plan submitted by the state.

b. What NRLM Diesel Fuel Standards Are We Establishing for Urban Areas of Alaska?

Since Alaska is currently exempt from the 500 ppm sulfur standard for highway diesel fuel, we also considered exempting Alaska from the 500 ppm sulfur step of the proposed NRLM standards. However, despite the exemption, officials from the state of Alaska have informed us that some 500 ppm sulfur diesel fuel is nevertheless being marketed in many parts of Alaska. Market forces have brought the prices for 500 ppm diesel fuel down such that it is now becoming competitive with higher sulfur, uncontrolled diesel fuel. Assuming this trend continues, requiring that NRLM diesel fuel be produced to 500 ppm beginning June 1, 2007 would not appear to be unduly burdensome. Even if 500 ppm diesel fuel were not available in Alaska today, our expectation is that compliance with the highway program described above will likely result in the transition of all of the urban area highway diesel fuel distribution system to 15 ppm sulfur beginning in 2006. It could prove very challenging for the distribution system in some of the areas to segregate a 500 ppm sulfur grade of NRLM from a 15 ppm sulfur grade of highway and an uncontrolled grade for other purposes. We believe economics would determine whether the distribution system would handle the new grade of fuel or substitute 15 ppm sulfur highway diesel fuel for NRLM applications. Thus, in the 2007 to 2010 time frame, the NRLM market in some urban areas might be supplied with 500 ppm sulfur diesel, and in other areas might be supplied with 15 ppm sulfur diesel. For this reason, today's action applies the 500 ppm sulfur standard for NRLM diesel fuel to Alaska's urban areas.

Regardless of what occurs prior to 2010, we anticipate that 15 ppm sulfur highway diesel fuel will be made available in urban areas of Alaska by this time frame. The 2007 and later model year highway fleet will be growing, demanding more and more supply of 15 ppm sulfur diesel fuel. Adding nonroad volume to this would not appear to create any undue burden. Thus, today's action also applies the 15 ppm sulfur standard for NR and LM diesel fuel in the urban areas of Alaska, along with the rest of the nation beginning June 1, 2010 and June 1, 2012, respectively.

The state, in its comments on the proposal, supports today's action for the urban areas described above. One refiner in Alaska commented that we should implement a one-step approach requiring 15 ppm sulfur diesel fuel starting in 2010. The refiner indicated that, due to the limited NRLM market, the benefits of introducing 500 ppm sulfur diesel fuel in 2007 would be minimal. Also, the distribution system in Alaska is not capable of handling the two grades of diesel fuel that would be required between 2007 and 2010, thus 15 ppm sulfur fuel would be distributed as NRLM. We agree that the distribution system in Alaska is limited compared to the rest of the nation, and that consumption of diesel fuel by NRLM applications in Alaska is small. However, as previously discussed, we expect that some 500 ppm sulfur diesel fuel will be available due to market forces, and that 15 ppm sulfur highway diesel fuel will be available beginning in 2006 in the urban areas. Thus, requiring 500 ppm sulfur diesel fuel (or 15 ppm sulfur diesel fuel as a substitute) for the limited NRLM applications beginning in 2007 does not appear to create any undue burden on the fuel supply or the distribution system in urban Alaska.

During the development of the original 500 ppm sulfur highway diesel fuel standards in the early 1990's, refiners and distributors in Alaska expressed concern that if Alaska were required to dye its non-highway diesel fuel red along with the rest of the country, residual dye in tanks or other equipment would be enough to contaminate and disqualify Jet-A kerosene used as aviation fuel. Since much of the diesel fuel in Alaska is No. 1 and is indistinguishable from Jet-A kerosene, not only would tanks and transfer equipment have to be cleaned, but separate tankage would be needed. Consequently, we granted Alaska temporary exemptions from the dye requirement and in the January 18, 2001, highway diesel rule granted the state a permanent exemption.

The proposed use of a marker for heating oil in the 2007–10 time period presents similar concerns in Alaska's distribution system. In response to our request for comments on this issue, the state and refiners indicated that Alaska's system is not capable of accommodating dyes or markers and segregation. The priority of the state and fuel industry is to keep dyes and markers out of the fuel stream to prevent contamination of Jet-A and facilitate movement of the fuel. The comments suggested that implementation of refiner product designations, labeling of fuel pumps, retailer education, and rapid transition to ULSD would ensure that 500 ppm sulfur diesel fuel is used in NRLM equipment from 2007–10 and that 15 ppm sulfur diesel fuel is used in nonroad equipment after 2010.

In section IV.D below, we discuss the provisions that we are adopting for the State of Alaska that will allow us to enforce the NRLM diesel fuel program without requiring the fuel marker.

c. Why Are We Deferring Final Action on NRLM Diesel Fuel Standards for Rural Areas of Alaska?

We are deferring final action on the fuel sulfur standards and implementation deadlines for the rural areas of Alaska. We proposed to permanently exempt NRLM diesel fuel used in the rural areas from fuel content standards, except that diesel fuel used in 2011 and later model year nonroad engines would have had to meet the sulfur content standard of 15 ppm sulfur. However, this proposed action is inconsistent with the action requested by the state in its comments to the proposal. It is also inconsistent with the state's alternative implementation plan for highway diesel fuel in rural Alaska, which was submitted after publication of the proposal.

We intend to issue a supplemental proposal that would address both highway and NRLM diesel fuel sulfur standards for Alaska's rural areas. This proposal will address the comments submitted by the state, as well as the state's alternative implementation plan for highway diesel fuel.

2. American Samoa, Guam, the Commonwealth of Northern Mariana Islands, and Puerto Rico

a. What Provisions Apply in American Samoa, Guam, and the Commonwealth of Northern Mariana Islands?

As we proposed, we are excluding American Samoa, Guam and the Commonwealth of the Northern Mariana Islands (CNMI) from the NRLM diesel fuel sulfur standards and associated requirements. We also are excluding these territories from the tier 4 nonroad engine emissions standards, and other requirements associated with those emission standards. The territories will continue to have access to new nonroad diesel engines and equipment using pre-tier 4 technologies, at least as long as manufacturers choose to market those technologies. In the future, if manufacturers choose to market nonroad diesel engines and equipment only with tier 4 emission control

Alaska Department of Environmental Conservation, dated June 12, 2003.