

III.E leads us to conclude that this will provide adequate lead time.

The second fuel change, to 15 ppm maximum sulfur in mid-2010, and the related engine standards that begin to phase-in in the 2011 model year, provide the large majority of the environmental benefits of the program. These standards are also timed to provide adequate lead time for manufacturers, and to phase in over time to allow for the orderly transfer of technology from the highway sector. We believe that the high-efficiency exhaust emission technologies being developed to meet our 2007 emission standards for heavy-duty highway diesel engines can be adapted to nonroad diesel applications. The engines for which we believe this adaptation from highway applications will be most straightforward are those in the over 175 hp power range, and thus under our proposal these engines would be subject to new standards requiring high-efficiency exhaust emission controls as soon as the 15 ppm sulfur diesel fuel is widely available, that is, in the 2011 model year. Engines between 75 and 175 hp would be subject to the new standards in the following model year, 2012, reflecting the greater effort involved in adapting highway technologies to these engines. Lastly, engines between 25 and 75 hp would be subject to the new PM standard in 2013, reflecting the even greater challenge of adapting PM filter technology to these engines which typically do not have highway counterparts. There are additional phase-in provisions discussed in Section III.B.1.b aimed at further drawing from the highway technology experience.

In addition to addressing technology transfer, this approach reflects the need to distribute the workload for engine and equipment redesign over three model years, as was provided for in Tier 3. Overall, this approach provides 4 to 6 years of real world experience with the new technology in the highway sector, involving millions of engines (in addition to the several additional years provided by demonstration fleets already on the road), before the new standards take effect.

b. Phase-In of NO_x and NMHC Standards

Because the Tier 4 NO_x emissions control technology, like PM control technology, is expected to be derived from technology first introduced in highway HDDEs, we believe that the implementation of the Tier 4 NO_x standard should follow the pattern we adopted for the highway program. This will help to ensure a focused, orderly development of robust high-efficiency

NO_x control in the nonroad sector and will also help to ensure that manufacturers are able to take maximum advantage of the highway engine development program, with resulting cost savings. The heavy-duty highway rule allows for a gradual phase-in of the NO_x and NMHC requirements over multiple model years: 50 percent of each manufacturer's U.S.-directed production volume must meet the new standard in 2007–2009, and 100 percent must do so by 2010. We also provided flexibility for highway engine manufacturers to meet that program's environmental goals by allowing somewhat less-efficient NO_x controls on more than 50% of their production before 2010 via emissions averaging. Similarly, we are proposing to phase in the NO_x standards for nonroad diesels over 2011–2013 as indicated in Figure III.B–2, based on compliance with the Tier 4 standards for 50% of a manufacturer's U.S.-directed production in each power category at or above 75 hp in each phase-in model year.

With a NO_x phase-in, all manufacturers are able to introduce their new technologies on a limited number of engines, thereby gaining valuable experience with the technology prior to implementing it on their entire product line. In tandem with the equipment manufacturer transition program discussed in section VII.B, the phase-in ensures timely progress to the Tier 4 standards levels while providing a great degree of implementation flexibility for the industry.

We are proposing this “percent of production phase-in” to take maximum advantage of the highway program technology development. It adds a new dimension of implementation flexibility to the staggered “phase-in by power category” used in the nonroad program for Tiers 1, 2 and 3 which, though structured to facilitate technology development and transfer, is more aimed at spreading the redesign workload. Because the Tier 4 program would involve substantial challenges in addressing both technology development and redesign workload, we believe that incorporating both of these phase-in mechanisms into the proposed program is warranted, resulting in the coordinated phase-in plan shown in Figure III.B–2. Note that this results in our proposing that new NO_x requirements for 75–175 hp engines be deferred for the first year of the 2011–2013 general phase-in, in effect creating a 50–50% phase-in in 2012–2013 for this category. This then staggers the Tier 4 start years by power category as in past tiers: 2011 for engines at or above 175 hp, 2012 for 75–175 hp engines, and

2013 for 25–75 hp engines (for which no NO_x adsorber-based standard and thus no percentage phase-in is being proposed), while still providing a production-based phase-in for advanced NO_x control technologies.

We believe that the 75–175 hp category of engines and equipment may involve added workload challenges for the industry to develop and transfer technology. We note that this category, though spanning only 100 hp, represents a great diversity of applications, and comprises a disproportionate number of the total nonroad engine and machine models. Some of these engines, though having characteristics comparable to many highway engines such as turbocharging and electronic fuel control, are not directly derived from highway engine platforms and so are likely to require more development work than larger engines to transfer emission control technology from the highway sector. Furthermore, the engine and equipment manufacturers have greatly varying market profiles in this category, from focused one- or two-product offerings to very diverse product lines with a great many models. We are interested in providing useful flexibility for a wide range of companies in implementing the Tier 4 standards, while keeping a priority on bringing PM emissions control into this diverse power category as quickly as possible.

We are therefore proposing two compliance flexibility provisions just for this category. First, we propose to allow manufacturers to use NMHC+NO_x credits generated by Tier 2 engines over 50 hp (in addition to any other allowable credits) to demonstrate compliance with the Tier 4 requirement for 75–175 hp engines in 2012, 2013, and 2014 only. This would not otherwise be allowed, for reasons explained in section VII.A. These Tier 2 credits would be subject to the power rating conversion already established in our ABT program, and to the 20% credit adjustment we are proposing for use of NMHC+NO_x credits as NO_x credits. (See section VII.A.)

Second, we realize that some manufacturers, especially those with limited product offerings, may not have sufficient banked credits available to them to benefit from this special flexibility, and so we are also proposing an alternative flexibility provision. A manufacturer may optionally forego the Tier 2 banked credit use provision described above, and instead demonstrate compliance with a reduced phase-in requirement for NO_x and NMHC. Use of credits other than banked Tier 2 credits would still be allowed, in