

power cutpoints corresponding to 50 and 100 hp). However, we believe that it provides substantial long-term benefits for the environment (for example, by linking NO_x standard-setting to an engine technology-based 75 hp cutpoint). We will continue working with key entities to advance harmonization as this rule is developed.

We are also proposing to consolidate some power categories that were created in the past to allow for variations in standards levels and timing appropriate for Tiers 1, 2 and 3, and that remain in effect for those tiers, but which under this proposal are no longer distinct from each other with respect to standards levels and timing. These consolidations are: (1) The less than 11 hp and 11–25 hp categories into a single category of less than 25 hp, (2) the 75–100 hp portion of the 50–100 hp category and the 100–175 hp category into a single category of 75–175 hp, and (3) the 175–300 hp, 300–600 hp, and 600–750 hp categories into a single category of 175–750 hp. The result is the 5 power bands shown in Figures III.B–1 and 2 instead of the former 9. This will also help to facilitate use of equipment manufacturer transition flexibility allowances which can be applied only within each power band, as discussed in section VII.B. We ask for comment on this regrouping, especially with regard to the appropriate power cutpoint for the engine families that are similar to highway engine families. Again, most useful in this regard would be information showing how highway and nonroad engines in this range do or do not share common design bases.

d. PM Standards for Smaller Engines

i. <25 hp

We believe that standards based on the use of PM filters should not be proposed at this time for the very small diesel engines below 25 hp. Although this technology could be adapted to these engines, the cost of doing so with known technology could be unacceptably high, relative to the cost of producing the engines themselves. Based on past experience, we expect that advancements in reducing these costs will occur over time. We plan to reassess the appropriate long-term standards in a technology review as discussed in section III.G. For the nearer-term, we believe that other proven PM-reducing technologies such as diesel oxidation catalysts and engine optimization can be applied to engines under 25 hp for very cost-efficient PM control, as discussed in sections III.E and V.A. When implemented, the PM standard proposed in Figure III.B–1 for

these engines, along with the proposed transient test cycle, will yield an in-use PM reduction of over 50% for these engines, and large reductions in toxic hydrocarbons as well. Achieving these emission reductions is very important, considering the fact that many of these smaller engines operate in populated areas and in equipment without closed cabs—in mowers, portable electric power generators, small skid steer loaders, and the like. We invite comment on this proposed approach to controlling harmful emissions from very small nonroad diesel engines.

It is our assessment that achieving low PM emission levels is especially challenging for one subclass of small engines: the air-cooled, direct injection engines under 11 hp that are startable by hand, such as with a crank or recoil starter. These typically one-cylinder engines find utility in applications such as plate compactors, where compactness and simplicity are needed, but where the ruggedness typical of a diesel engine is also essential. There are a number of considerations in the design, manufacture, and marketing of these engines that combine to make them difficult to optimize for low emissions. These include the air-cooled engine's need for relatively loose design fit tolerances to accommodate thermal expansion variability (which can lead to increased soluble organic PM), small cylinder displacement and bore sizes that limit use of some combustion chamber design strategies and increase the propensity for PM-producing fuel impingement on cylinder walls, the difficulty in obtaining components for small engines with machining tolerances tight enough to yield consistent emissions performance, and cost reduction pressures caused by competition from cheaper gasoline engines in some of the same applications.

As a result, we are proposing an alternative compliance option that allows manufacturers of these engines to delay Tier 4 compliance until 2010, and in that year to certify them to a PM standard of 0.45 g/hp-hr, rather than to the 0.30 g/hp-hr PM standard applicable to the other engines in this power category beginning in 2008. Engines certified under this alternative compliance requirement would not be allowed to generate credits as part of the ABT program, although credit use by these engines would still be allowed. We believe that this ABT restriction is important to avoid potential abuse of this option, and is a reasonable means of dealing with the concern as it would apply only to those air-cooled, hand-startable, direct injection engines under

11 hp that are certified under this special compliance option, and the production of credit-generating engines would be contrary to the option's purpose. Furthermore, because the proposed 2010 Tier 4 implementation year for these engines is the same year that 15 ppm sulfur nonroad diesel fuel would become available, we are also proposing that certification testing and any subsequent compliance testing on engines certified under this option may be conducted using the 7–15 ppm sulfur test fuel discussed in section VII.H. Although this is one year earlier than would be otherwise allowable, we believe it would have a minimal impact on the proposed program's environmental benefit considering the extremely small contribution these engines make to emissions inventories, and the fact that these engines would generally operate in the field on higher sulfur fuels for at most a few months.

ii. 25–75 hp

We believe that the proposed 0.22 g/bhp-hr PM standard for 25–75 hp engines in 2008 is warranted because the Tier 2 PM standards that take effect in 2004 for these engines, 0.45 and 0.30 g/bhp-hr for 25–50 and 50–75 hp engines, respectively, do not represent the maximum achievable reduction using technology which will be available by 2008. However, as discussed in section III.B.1.a, filter-based technology for these engines is not expected to be available on a widespread basis until the 2013 model year. The proposed 2008 PM standard for these engines should maximize reduction of PM emissions based on technology available in that year. We believe that the 2008 standards are feasible for these engines, based on the same engine or oxidation catalyst technologies feasible for engines under 25 hp in 2008, following the proposed introduction of nonroad diesel fuel with sulfur levels reduced below 500 ppm. We expect in-use PM reductions for these engines of over 50%, and large reductions in toxic hydrocarbons as well over the five model years this standard would be in effect (2008–2012). These engines will constitute a large portion of the in-use population of nonroad diesel engines for many years after 2008.

We request comment on our proposal to implement Tier 4 PM standards for 25–75 hp engines in the two phases just noted: a non-PM filter based standard in 2008 and a filter-based standard in 2013. In addition, we request comment on whether it would be better not to set a Tier 4 PM standard in 2008 so that engine designers could instead focus