

4. Emission and Benefit Impacts

We used the nonroad model to estimate the emission inventory impacts associated with this one-step option, as well as the other options listed in Table VI-1. As for all the alternatives, we then used the benefits transfer method to estimate the monetized benefits of the alternative.²⁹⁶ The results are shown in Table VI-1. As is evidenced by the values in Table VI-1, the one-step alternative would achieve slightly greater PM and NO_x emission reductions through 2030 than the proposed 2-step program, with 6,000 and 11,000 additional tons reduced, respectively (or less than 0.5 percent). Unlike the proposed 2-step program, however, there would be no SO₂ emission reductions in 2007 due to the delay in fuel sulfur control, although 2009 and later emission are slightly greater due primarily to the earlier introduction of engines using PM filters. Nevertheless, the SO₂ benefits of the one-step program are slightly less than the proposed 2-step program in the long run, by about 191,000 tons (about 4 percent) through 2030.

After careful consideration of these matters, we have decided to propose the two-step approach in today's notice. The two-step program avoids adverse risks to the smooth implementation of the entire Tier 4 nonroad program that could be caused by the significantly shortened lead-time and stability of the one-step program. There are also concerns about the potential negative impacts the one-step option may have on the 2007 highway program, including the implications of the overlap of implementation schedules (see above and Chapter 12 of the draft RIA). Nevertheless, we believe that the one-step approach is a regulatory alternative worth considering. In addition to seeking comment on our proposed program, we also seek comment on the relative merits and shortcomings of a one-step approach to regulating nonroad diesel fuel and the associated schedule for implementing the engine standards.

C. Applying 15 ppm Requirement to Locomotive and Marine Diesel Fuel

To enable the high efficiency exhaust emission control technology to begin to be applied to nonroad diesel engines

beginning with the 2011 model year, we are proposing that all nonroad diesel fuel produced or imported after June 1, 2010 would have to meet a 15 ppm sulfur cap. Although locomotive and marine diesel engines are similar in size to some of the diesel engines covered in this proposal, there are many differences that have caused us to treat them separately in past EPA programs.²⁹⁷ These include differences in duty cycles and exhaust system design configurations, size, and rebuild and maintenance practices. Because of these differences, we are not proposing new engine standards today for these engine categories. Since we are not proposing more stringent emission standards, we are also not proposing that the second step of sulfur control to 15 ppm in 2010 be applied to locomotive and marine diesel fuel. Instead, we are proposing to set a sulfur fuel content standard of 500 ppm for diesel fuel used in locomotive and marine applications. This fuel standard is expected to provide considerable sulfate PM and SO₂ benefits even without establishing more stringent emission standards for these engines. We estimate that, cumulatively through 2030, reducing the sulfur content of locomotive and marine diesel fuel would eliminate about 102,000 tons of sulfate PM (net present value, based on a 3 percent discount rate).

As discussed in section IV, we are seriously considering the option of extending the 15 ppm sulfur standard to locomotive and marine fuel as early as June 1, 2010, including them in the second step of the proposed two-step program. There are several advantages associated with this alternative. First, as reflected in Table VI-1, it would provide important additional sulfate PM and SO₂ emission reductions and the estimated benefits from these reductions would outweigh the costs by a considerable margin. Second, in some ways it would simplify the fuel distribution system and the design of the fuel program proposed today since a marker would not be required for locomotive and marine diesel fuel. Furthermore, the prices for locomotive and marine diesel fuel may be virtually unaffected. Under the proposal, we expect that a certain amount of marine fuel will be 15 ppm sulfur fuel regardless of the standard due to

limitations in the production and distribution of unique fuel grades. Where 500 ppm fuel is available, the possible suppliers of fuel will likely be more constrained, limiting competition and allowing prices to approach that of 15 ppm fuel. If we were to bring locomotive and marine fuel to 15 ppm, the pool of possible suppliers could expand beyond those today, since highway diesel fuel will also be at the same standard. Third, it would help reduce the potential opportunity for misfueling of 2007 and later model year highway vehicles and 2011 and later model year nonroad equipment with higher sulfur fuel. Finally, it would allow refiners to coordinate plans to reduce the sulfur content of all of their nonroad, locomotive, and marine diesel fuel at one time. While in many cases this may not be a significant advantage, it may be a more important consideration here since it is probably not a question of whether locomotive and marine fuel must meet a 15 ppm cap, but merely when. As discussed in section IV, it is the Agency's intention to propose action in the near future to set new emission standards for locomotive and marine engines that could require the use of high efficiency exhaust emission control technology, and thus, also require the use of 15 ppm sulfur diesel fuel.²⁹⁸ We anticipate that such engine standards would likely take effect in the 2011–13 timeframe, requiring 15 ppm locomotive and marine diesel fuel in the 2010–12 timeframe. We intend to publish an advance notice of proposed rulemaking for such standards by the Spring of 2004 and finalize those standards by 2007.

However, discussions with refiners have suggested there are significant advantages to leaving locomotive and marine diesel fuel at 500 ppm, at least in the near-term and until we set more stringent standards for those engines. The locomotive and marine diesel fuel markets could provide an important market for off-specification product, particularly during the transition to 15 ppm for highway and nonroad diesel fuel in 2010. Waiting just a year or two beyond 2010 would address the critical near-term needs during the transition. In addition, waiting just another year or two beyond 2010 is also projected to allow virtually all refiners to take advantage of the new lower cost technology.

After careful consideration of these matters, we have decided not to propose

²⁹⁶ The results that were obtained for Option 1a were extrapolated based on the emission inventory changes to the proposed program and were obtained for the other alternatives by assuming the air quality changes between the alternative and the actual case run were small enough to allow for such extrapolation. An explanation of the benefits transfer method is contained in Chapter 9 of the draft RIA.

²⁹⁷ Locomotives, in fact, are treated separately from other nonroad engines and vehicles in the Clean Air Act, which contains provisions regarding them in section 213(a)(5). Less than 50 hp marine engines were included in the 1998 final rule for nonroad diesel engines, albeit with some special provisions to deal with marine-specific engine characteristics and operating cycles.

²⁹⁸ EPA established the most recent new standards for locomotives and marine diesel engines (including those under 50 hp) in separate actions (63 FR 18977, April 16, 1998, and 67 FR 68241, November 8, 2002).