

- c. Visibility Impairment in Mandatory Federal Class I Areas
- 2. Acid Deposition
- 3. Eutrophication and Nitrification
- 4. Polycyclic Organic Matter Deposition
- 5. Plant Damage from Ozone
- D. Other Criteria Pollutants Affected by This NPRM
- E. Emissions From Nonroad Diesel Engines
  - 1. PM<sub>2.5</sub>
  - 2. NO<sub>x</sub>
  - 3. SO<sub>2</sub>
  - 4. VOC and Air Toxics
- III. Nonroad Engine Standards
  - A. Why are We Setting New Engine Standards?
    - 1. The Clean Air Act and Air Quality
    - 2. The Technology Opportunity for Nonroad Diesel Engines
  - B. What Engine Standards are We Proposing?
    - 1. Exhaust Emissions Standards
      - a. Standards Timing
      - b. Phase-In of NO<sub>x</sub> and NMHC Standards
    - c. Rationale for Restructured Horsepower Categories
    - d. PM Standards for Smaller Engines
      - i. <25 hp
      - ii. 25–75 hp
    - e. Engines Above 750 hp
    - f. CO Standards
    - g. Exclusion of Marine Engines
    - 2. Crankcase Emissions Control
  - C. What Test Procedure Changes Are Being Proposed?
    - 1. Supplemental Transient Test
    - 2. Cold Start Testing
  - D. What Is Being Done To Help Ensure Robust Control In Use?
    - 1. Not-to-Exceed Requirements
      - a. NTE Standards We are Proposing
      - b. Comment Request on an Alternative NTE Approach
    - 2. Plans for Future In-Use Testing and Onboard Diagnostics
      - a. Manufacturer-Run In-Use Test Program
      - b. Onboard Diagnostics
  - E. Are the Proposed New Standards Feasible?
    - 1. Technologies To Control NO<sub>x</sub> and PM Emissions From Mobile Source Diesel Engines
      - a. PM Control Technologies
      - b. NO<sub>x</sub> Control Technologies
    - 2. Can These Technologies Be Applied to Nonroad Engines and Equipment?
      - a. Nonroad Operating Conditions and Exhaust Temperatures
      - b. Nonroad Operating Conditions and Durability
    - 3. Are the Standards Proposed for Engines of 75 hp or Higher Feasible?
    - 4. Are the Standards Proposed for Engines ≥25 hp and <75 hp Feasible?
      - a. What makes the 25–75 hp category unique?
      - b. What engine technology is used today, and will be used for the applicable Tier 2 and Tier 3 standards?
    - c. Are the proposed standards for 25–75 hp engines technologically feasible?
      - i. 2008 PM Standards
      - ii. 2013 Standards
    - d. Why EPA has not proposed more stringent Tier 4 NO<sub>x</sub> standards
  - 5. Are the Standards Proposed for Engines <25 hp Feasible?
    - a. What makes the < 25 hp category unique?
    - b. What engine technology is currently used in the <25 hp category?
    - c. What data indicates that the proposed standards are feasible?
    - d. Why has EPA not proposed more stringent PM or NO<sub>x</sub> standards for engines <25 hp?
  - 6. Meeting the Crankcase Emissions Requirements
  - F. Why Do We Need 15ppm Sulfur Diesel Fuel?
    - 1. Catalyzed Diesel Particulate Filters and the Need for Low Sulfur Fuel
      - a. Inhibition of Trap Regeneration Due to Sulfur
      - b. Loss of PM Control Effectiveness
      - c. Increased Maintenance Cost for Diesel Particulate Filters Due to Sulfur
    - 2. Diesel NO<sub>x</sub> Catalysts and the Need for Low Sulfur Fuel
      - a. Sulfur Poisoning (Sulfate Storage) on NO<sub>x</sub> Adsorbers
      - b. Sulfate Particulate Production and Sulfur Impacts on Effectiveness of NO<sub>x</sub> Control Technologies
    - G. Reassessment of Control Technology for Engines Less Than 75 hp in 2007
- IV. Our Proposed Program for Controlling Nonroad, Locomotive and Marine Diesel Fuel Sulfur
  - A. Proposed Nonroad, Locomotive and Marine Diesel Fuel Quality Standards
    - 1. What Fuel Is Covered by this Proposal?
    - 2. Standards and Deadlines for Refiners, Importers, and Fuel Distributors
      - a. The First Step to 500 ppm
      - b. The Second Step to 15 ppm
      - c. Other Standard Provisions
      - d. Cetane Index or Aromatics Standard
  - B. Program Design and Structure
    - 1. Background
    - 2. Proposed Fuel Program Design and Structure
      - a. Program Beginning June 1, 2007
      - i. Use of a Marker To Differentiate Heating Oil from NRLM
      - ii. Non-highway Distillate Baseline Cap
      - iii. Setting the Non-highway Distillate Baseline
      - iv. Diesel Sulfur Credit Banking, and Trading Provisions for 2007
    - b. 2010
      - i. A Marker To Differentiate Locomotive and Marine Diesel from Nonroad Diesel
      - ii. Diesel Sulfur Credit Banking and Trading Provisions for 2010
    - c. 2014
    - 3. Other Options Considered
      - a. Highway Baseline and a NRLM baseline for 2007
      - i. Highway Baseline
      - ii. Nonroad, Locomotive, and Marine Baseline
      - iii. Combined Impact of Highway and NRLM Baselines
      - b. Locomotive and Marine Baseline for 2010
      - c. Designate and Track Volumes in 2007
      - i. Replacement for the Non-highway Baseline Approach
      - ii. Designate and Track as a Refiners Option in Addition to the Baseline Approach
  - C. Hardship Provisions for Qualifying Refiners
    - 1. Hardship Provisions for Qualifying Small Refiners
      - a. Qualifying Small Refiners
        - i. Regulatory Flexibility for Small Refiners
        - ii. Rationale for Small Refiner Provisions
        - iii. Limited Impact of Small Refiner Options on Program Emissions Benefits
      - b. How Do We Define Small Refiners for Purposes of the Hardship Provisions?
      - c. What Options Are Available for Small Refiners?
        - i. Delays in Nonroad Fuel Sulfur Standards for Small Refiners
        - ii. Options to Encourage Earlier Compliance by Small Refiners
      - d. How Do Refiners Apply for Small Refiner Status?
    - 2. General Hardship Provisions
      - a. Temporary Waivers From Non-highway Diesel Sulfur Requirements in Extreme Unforeseen Circumstances
      - b. Temporary Waivers Based on Extreme Hardship Circumstances
    - D. Should Any Individual States or Territories Be Excluded From This Rule?
      - 1. Alaska
        - a. How Was Alaska Treated Under the Highway Diesel Standards?
        - b. What Nonroad Standards Do We Propose for Urban Areas of Alaska?
        - c. What Do We Propose for Rural Areas of Alaska?
      - 2. American Samoa, Guam, and the Commonwealth of Northern Mariana Islands
        - a. What Provisions Apply in American Samoa, Guam, and the Commonwealth of Northern Mariana Islands?
        - b. Why Are We Treating These Territories Uniquely?
    - E. How Are State Diesel Fuel Programs Affected by the Sulfur Diesel Program?
    - F. Technological Feasibility of the 500 and 15 ppm Sulfur Diesel Fuel Program
      - 1. What Is the Nonroad, Locomotive and Marine Diesel Fuel Market Today?
      - 2. How Do Nonroad, Locomotive and Marine Diesel Fuel Differ From Highway Diesel Fuel?
      - 3. What Technology Would Refiners Use To Meet the Proposed 500 ppm Sulfur Cap?
      - 4. Has Technology To Meet a 500 ppm Cap Been Commercially Demonstrated?
      - 5. Availability of Leadtime To Meet the 2007 500 ppm Sulfur Cap
      - 6. What Technology Would Refiners Use To Meet the Proposed 15 ppm Sulfur Cap for Nonroad Diesel Fuel?
      - 7. Has Technology To Meet a 15 ppm Cap Been Commercially Demonstrated?
      - 8. Availability of Leadtime To Meet the 2010 15 ppm Sulfur Cap
      - 9. Feasibility of Distributing Nonroad, Locomotive and Marine Diesel Fuels That Meet the Proposed Sulfur Standards
        - a. Limiting Sulfur Contamination
        - b. Potential Need for Additional Product Segregation
    - G. What Are the Potential Impacts of the 15 ppm Sulfur Diesel Program on Lubricity and Other Fuel Properties?
      - 1. What Is Lubricity and Why Might It Be a Concern?
      - 2. A Voluntary Approach on Lubricity