Voluntary Diesel Retrofit Program

Jim Blubaugh
Outreach and Planning Group
Certification and Compliance Division

Background Information

- EPA launched the Voluntary Diesel Retrofit Program March 22, 2000 at the Diesel Emission Control Retrofit Workshop hosted by Corning, Inc. We discussed:
  - The serious health effects of diesel emissions and the impact they have on our communities
  - Upcoming diesel engine and fuel regulations
  - Our goals for the Retrofit Program:
    - To have commitments for 10,000 retrofits by the end of 2000
    - To create several pilot projects
    - To Build Partnerships
    - To help identify potential funding sources
    - To create the details of a National Retrofit Program
    - To create a web site that serves as an information clearinghouse

10,000 Retrofit Commitment Goal

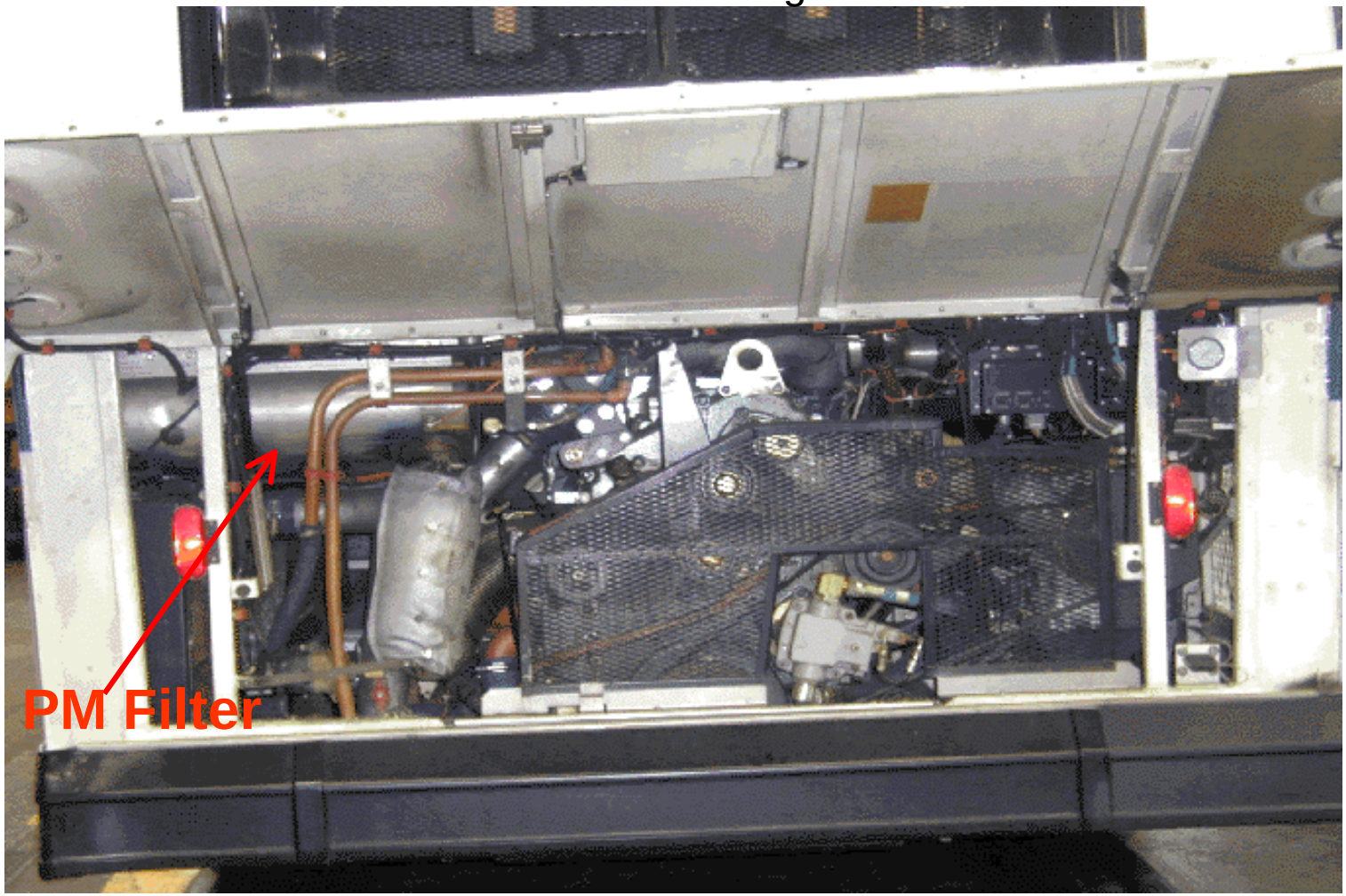
- Any change to an engine system above and beyond what is required by EPA regulations that improves the emission performance of a diesel engine will count:
  - Addition of new/improved emission control equipment
  - Upgrading a certified engine to a cleaner certified configuration
  - Upgrading an uncertified engine to a cleaner "certified-like" configuration
  - Conversion of any engine to run on a cleaner fuel
  - Early replacement of older engines with newer/cleaner engines
  - Use of cleaner fuel and/or emission reducing fuel additive
- As of December 21, 2000, the official count is approximately 13,500 commitments for retrofit

Current Pilot Projects

- Create ‘seed’ projects to generate interest
- Allow EPA to evaluate various technologies
  - Emission performance
  - Durability and Maintenance
- Since the Corning workshop:
  - **Seattle**: Everett, WA School District
    - 20 - 50 School buses
  - **Washington DC**, Metro Area Transit Authority (WMATA)
    - 10 metro buses with PM and NOx control
  - **Washington DC**, Waste Management, Inc.
    - MOU to retrofit ~10 Sanitation trucks
  - **Norfolk Naval Base**
    - Marine CI engines
    - Very high fuel sulfur levels (~4000 PPM) present great challenge

Pilot Projects

Transit bus in New York City's Clean Diesel Demonstration Program



Future Pilot Projects

- Expansion of the 4 pilots:
  - St. Louis
  - Atlanta
  - Houston
- Integration of our in-use testing capabilities with our retrofit projects.
  - ROVER testing
  - Pre-installation
  - Post-installation
  - Durability assessments

Details of the Retrofit Program

- We want to create a uniform process that each city, state, or fleet owner will follow
- Following this process provides confidence that reductions are real
- Components of this process:
  - Verifying Retrofit Technologies
  - Conservative Project Phase-in Schedules
  - In-use Testing Requirements
  - Calculating Emissions Reductions

Details of the Retrofit Program

1. Verifying Retrofit Technologies:

- Transitioning from the NESCAUM 3rd party review to EPA's Environmental Technology Verification (ETV) Program
- The ETV program will:
  - Develop generic testing protocols and more specific testing plans
  - Provide objective performance data
  - A Technical Panel has been developed to finalize details of the testing protocols
  - Next meeting to be held at the end of this month
- OTAQ will turn performance data into the "Verified Technology List" which will:
  - List Percent Reductions
  - Describe compatibility issues
  - Be available on the Retrofit web site

Details of the Retrofit Program

2. Conservative Project Phase-in Schedules:

- Incorporating Voluntary Measures in a SIP requires credit shortfalls to be remedied in a timely manner
- Retrofit technologies still relatively new…credit shortfall possibilities exist
- Phasing in allows for an opportunity to recover shortfalls by installing more retrofits

The schedule:

Year 1: Pilot projects, less than 50 retrofit units

Year 2: Expand pilot project to retrofit no more than 25% of fleet

Year 3: Expand project to retrofit no more than 50% of total fleet

Details of the Retrofit Program

3. In-use Testing Requirements:

- In-use testing responsibility of the retrofit manufacturer
- Testing required for a given product after 500 units sold
- Two groups of units are identified and tested at 2 stages:
  - 25% and 75% of manufacturer's useful life
- At each stage:
  - At least 4 units must be tested, up to 10
  - To pass each test: at least 75% of verified reduction must be achieved
  - To pass the Stage: 4 units must pass **AND** >70% must pass
  - Engine or chassis dyno tests are appropriate, mobile emissions testing systems are a possibility
  - Failures initiate FTP dyno testing and possibly de-verification

Details of the Retrofit Program

4. Calculating Emissions Reductions:

- Three equations can be used to calculate reductions:
  - Fuel consumption
  - Mileage
  - Service
- Baseline emission levels for Highway vs. Nonroad
  - Highway: Official certification levels are available
  - Nonroad: Most retrofits may be pre-regulated: no info available
- BSFC: May be difficult to obtain in g/bhp-hr
  - Highway: Mobile 6 model
  - Nonroad: ?
- EPA's Retrofit Calculator

Voluntary Retrofit Web Site

- Web site's address: www.epa.gov/otaq/retrofit
- Contains the following information:
  - Technology verification information
  - Funding information
  - Information about past and current retrofit projects
  - Diesel emissions and control information
- Went live on December 1, 2000
- Received over 4,000 hits last month
- Web site demonstration