

Supporting Statement for
Information Collection Request

Notice of Rulemaking
Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty
Engines and Vehicles
EPA ICR Tracking Number 2394.02

Office of Transportation and Air Quality
Office of Air and Radiation
U.S. Environmental Protection Agency

and

National Highway Traffic Safety Administration
U.S. Department of Transportation

1. Identification of the Information Collection

1 (a) Title and Number of the Information Collection

Control of Greenhouse Gas Emissions and Reduction of Fuel Consumption from New Motor Vehicles: Heavy- Duty Engine and Vehicle Standards

OMB Control Number 2060-NEW, EPA ICR Tracking Number 2394.02.

1(b) Short Characterization

The Environmental Protection Agency (EPA) and the National Highway Traffic Safety Administration (NHTSA) are jointly issuing new standards to address greenhouse gas (GHG) emissions and fuel consumption in the heavy-duty (HD) trucking sector. As a result of these standards, HD engine and HD vehicle manufacturers will be subject to new testing, reporting, and recordkeeping requirements. The paperwork and cost burdens associated with these requirements are identified in this ICR.

This is a new ICR. Once it is approved, it will be transferred to the ICR 2060-0287 series, which is already in place to support EPA’s heavy duty engine and vehicle information collection activities.

Historically, EPA’s approach to regulating the heavy-duty trucking sector has been to set standards that reduce emissions from a truck’s engine. The agency’s focus on setting standards that reduce HD engine emissions is due mostly to the fact that engines are primarily responsible for emissions of “criteria pollutants,” including carbon monoxide, nitrogen oxides, ozone, and particulate matter.

On May 21, 2010, the President issued a memorandum calling for the Administrators of NHTSA and EPA to “immediately begin work on a joint rulemaking under the Clean Air Act (CAA) and the Energy Independence and Security Act of 2007 (EISA) to establish fuel efficiency and greenhouse gas emissions standards for commercial medium-and heavy-duty on-highway vehicles and work trucks beginning with the 2014 model year (MY).”¹

Addressing GHG emissions and the fuel efficiency of heavy-duty vehicles, requires a different approach than the EPA existing HD program. Specifically, reducing GHG emissions and the fuel consumed by a truck requires increasing the inherent efficiency of the engine **and** making changes to the vehicle to reduce the amount of work demanded from the engine in order to move the truck – and its load – down the road.

As a result, the standards that support the HD National Program address the complete vehicle, through complementary engine and vehicle standards. Consistent with the structure of this program, the testing, reporting, labeling and recordkeeping requirements described in this ICR cover heavy-duty gas and diesel engines, and three regulatory categories of heavy-duty vehicles, as listed in Table 1-1.

Heavy-duty Pickup Trucks and Vans	Combination Tractors
Vocational Vehicles	Heavy-duty Gasoline and Diesel Engines

Importantly, the HD National Program recognizes that under EPA regulations covering criteria pollutants,

¹ Improving Energy Security, American Competitiveness and Job Creation, and Environmental Protection Through a Transformation of Our Nation’s Fleet of Cars And Trucks,” Issued May 21, 2010, published at 75 FR 29399, May 26, 2010

heavy-duty engine and pickup truck and van manufacturers already administer extensive emissions testing and reporting programs. EPA and NHTSA fully expect that engine and pickup truck and van manufacturers will utilize their existing reporting and testing infrastructure to demonstrate compliance with the new program's new fuel consumption and GHG standards, including those for CO₂, N₂O and CH₄ emissions.

Manufacturers of vocational vehicle chassis and combination tractors, however, have never before been required to test their vehicles for emissions or fuel consumption. Under the HD National Program these manufacturers are now subject to CO₂ and fuel consumption standards. As their vehicles are not directly responsible for N₂O and CH₄ emissions, vocational vehicle chassis and combination tractor manufacturers are not subject to the new standards for these pollutants.

To demonstrate compliance with the new CO₂ and fuel consumption standards, vocational vehicle chassis and tractor manufacturers will have to put in place entirely new testing programs, reporting, labeling and recordkeeping systems. As a consequence, start-up costs for vocational vehicle chassis and combination tractor manufacturers, especially in the first year of the program, are higher than for engine, pickup truck and van manufacturers.

Notably, to streamline the reporting process and reduce industry burden for all manufacturers, EPA and NHTSA have established a harmonized approach by which all information for the HD National Program will be submitted by manufacturers through a single database system. Both EPA and NHTSA will have access to data in this database system, which also will help the agencies to efficiently review, process, and store the heavy duty data relevant to each agency's program requirements.

Again, as the National HD Program gets underway in its first year, this ICR reflects higher start up costs as manufacturers invest in new and upgraded test equipment and information management systems. Additional costs in the first year also are expected due to the time and labor hours needed for industry to review, assess and begin implementing the new GHG and fuel consumption standards, testing and reporting requirements. EPA and NHTSA estimate that these costs will go down significantly after the second year of the program's implementation.

Approximately 12 engine manufacturers and 22 vehicle and chassis manufacturers will submit 228 applications (24 heavy-duty pickup truck, 108 heavy-duty engine, 60 vocational vehicle and 36 combination tractor applications) to certify their products and respond to the information collection activities detailed in the HD National Program. Beginning in calendar year 2014, the first year that the program becomes effective, these collection activities are estimated to impose annual costs of \$8.5 million and a labor hour burden of 58,064 hours. In subsequent years, years 2015 and 2016, annual costs and burden hours are estimated at \$2.6 million and 32,926 hours, respectively.

2. Need for and Use of the Collection

2(a) Need/Authority for the Collection

Under Title II of the Clean Air Act (42 U.S.C. 7521 et seq.), EPA is charged with issuing certificates of conformity for motor vehicle designs and engines that comply with applicable emission standards set under section 202(a)(1) of the Act, such as those for CO₂, N₂O, and CH₄ in the final regulation. This authority was clarified in the Supreme Court's decision State of Massachusetts v. EPA, 549 U.S. 497 (2007) (holding that greenhouse gases are pollutants under the Clean Air Act). Under the statutory authority of 49 U.S.C. 32902, NHTSA is mandated to require manufacturers comply with fuel economy and consumption standards.

The manufacturers regulated under this program must: 1) submit applications to certify vehicles; 2) submit reports with early estimates to demonstrate their compliance plans; 3) conduct compliance testing; 4) label certified vehicles; 5) provide final year-end-reports with compliance test results; and 6) retain records of information submitted to the agencies. A manufacturer must send an application for a certificate of conformity and gain approval by EPA before it can legally introduce any vehicle or engine into commerce in the U.S. To ensure compliance with the CAA and EISA, EPA and NHTSA will annually review a manufacturer's submitted

information and compliance test results. Manufacturer test results will be used by EPA to perform confirmatory testing on a sufficient number of engines and vehicles to confirm manufacturer-reported results. Limited equipment testing and modeling runs will also be performed by NHTSA to confirm manufacturer test results.

EPA's emission certification programs and NHTSA's fuel efficiency programs are statutorily mandated. EPA does not have discretion to cease these functions. Specifically, under Section 206(a) of the CAA (42 USC 7521):

“The Administrator shall test, or require to be tested in such manner as he deems appropriate, any new motor vehicle or new motor vehicle engine submitted by a manufacturer to determine whether such vehicle or engine conforms with the regulations prescribed under §202 of this Act. If such vehicle or engine conforms to such regulations, the Administrator shall issue a certificate of conformity upon such terms, and for such period (not in excess of one year) as he may prescribe.”

In addition to test results, as part of their application for a certificate of conformity, under CAA §217, manufacturers are required to pay an application fee when applying for a vehicle or engine certificate. At this time, the exact costs associated with the heavy-duty vehicle GHG compliance are not known. The Agency is not modifying its fees provisions in this final rule and is determining how to appropriately address this issue in the future. When EPA finalizes a cost assessment of its compliance program, it will amend its fees regulations to include any warranted new costs.

EPA and NHTSA also are establishing an Average, Banking and Trading (ABT) program, as outlined in 40 CFR Parts 1036.701 and 1037.701, and in 49 CFR Part 535.7. Engine and vehicle manufacturers covered by this HD National Program have an option to participate in this ABT program. The agencies' ABT programs, and others like it, are designed to enhance compliance flexibility and reduce the burden on affected manufacturers, without compromising the expected emissions benefits derived from EPA's emissions standards and NHTSA's fuel consumption standards.

EPA's new GHG standards for HD engines and vehicles amend 40 CFR Part 86 subchapter U with the addition of two new parts: part 1036 (engines) and part 1037 (vehicles). The introduction of new parts in the CFR is part of a long-term plan to migrate all the regulatory provisions related to highway and nonroad engine and vehicle emissions to Subchapter U of 40 CFR, which already consists of 40 CFR parts 1000 through 1299. NHTSA's new fuel consumption standards for HD engines and vehicles amend 49 CFR Parts 523, 534, and 535.

Emission standards, test procedures and compliance provisions for several types of engines already exist in parts 1033 through 1074, and eventually all regulatory requirements related to heavy-duty highway engines and vehicles will be placed in these parts. Moving its regulatory provisions to these new parts will allow EPA to publish its regulations in a way that is more organized, reflects updates to various certification and compliance procedures, and provides greater consistency. For now, until this migration is complete, the new HD GHG standards also have generated amendments to 49 CFR Parts 523, 534, and 535. Other existing regulations that pertain to controlling emissions from engines and vehicles can be found in 40 CFR Parts 86 and 600.

These regulations are not attached to this statement due to their length and technical nature.

2(b) Need/Authority for the Collection

The testing data submitted by manufacturers is needed for EPA and NHTSA to verify that manufacturers have selected the proper engines and vehicles, and conducted the testing necessary to demonstrate that their equipment complies with the new GHG emissions and fuel consumption standards.

Under the rule, manufacturers of heavy-duty pickup trucks and vans will submit “pre-model year reports” to satisfy both EPA and NHTSA's requirements for receiving compliance reports in advance of the model year. These pre-model reports for heavy duty pickup trucks and vans are similar to early model year compliance reports that are required

for light duty vehicles, and the pre-production data included in the report should be familiar to manufacturers of heavy duty pickup trucks and vans.

For engines, vocational vehicle chassis and combination tractor manufacturers, the agencies will use the manufacturer's applications for certificates of conformity to obtain early model production estimates and related data. The agencies will treat information submitted in the applications as a manufacturer's demonstration of providing early compliance information, similar to the pre-model year report submitted for heavy-duty pickup trucks and vans. A summary of that information can be found in Table 4-2.

Once the engines and vehicles have been produced, EPA and NHTSA also use the test data and the data included in the pre-model reports and certification applications to support various enforcement actions, such as selective enforcement audits and in-use compliance testing.

As noted, the HD National Program offers manufacturers an opportunity to participate in an Average, Banking and Trading (ABT) program and other regulatory flexibilities that allow manufacturers to generate emission and fuel consumption credits. For manufacturers that choose to participate and take advantage of these flexibilities, EPA and NHTSA collect data to ensure that allowable emission and fuel consumption credits are properly allocated, traded and applied. This data is provided in an End of Year or "EOY" production report and compared against production estimates submitted in the pre-model year report and certification applications.

Throughout the year, manufacturers may also be required to report various submissions to the agencies to comply with other various aspects of the rule. This other data collected, such as notifications that a manufacturer intends to participate in the ABT program or that a vehicle qualifies for an exclusion are needed so that the agencies can ensure that manufacturers are complying with the HD National Program's regulatory provisions. A summary of required information for compliance is listed in Tables 4-1, 4-3, and 4-5.

All test and ABT data will be received and used by EPA's Compliance Division (CD) within the Agency's transportation and air quality office. Other EPA offices and divisions also may access the data to assess the effectiveness of the HD National program. Information will be shared with NHTSA as needed. Non-confidential portions of the information submitted to CD are available to and may be used by importers, engine users, environmental groups, members of the public and state and local government organizations.

3. Nonduplication, Consultations and Other Collection Criteria

3(a) Nonduplication

The information requested under this ICR is authorized by statute in the Clean Air Act §208(a) which requires manufacturers to establish and maintain records, perform tests, make reports, and provide information the Administrator reasonably require to determine whether the manufacturer is in compliance. This rulemaking contains specific recordkeeping provisions in 40 CFR 1036.205 and 1037.205, which are summarized in Table 4-8. Because of its specialized (and sometimes confidential nature), and the fact that it is submitted jointly to EPA and shared with NHTSA prior to the start of vehicle or engine production, the information collected is not available from any other source. Information submitted under the ABT program is submitted voluntarily by manufacturers choosing to utilize those provisions.

The agencies developed this rulemaking to build on existing test procedures and reporting structures where possible to prevent duplication. Examples of the harmonization with the existing heavy-duty programs covered under OMB Control Number 2060-0104 are listed below:

- The heavy-duty pickup truck and van test procedures and certification application process for this rulemaking contain the same procedures and application process used today to certify these vehicles for non-GHG emissions standards, such as NO_x, PM, and HC.
- Similarly, heavy-duty engines today are certified for non-GHG emissions standards. This rulemaking uses the same test procedures and certification process used today.

3(b) Public Notice Required Prior to ICR Submission to OMB

EPA solicited public comment by means of a Federal Register Notice published on November 30, 2010, 75 Federal Register 74152; a copy can be found at <http://www.epa.gov/otaq/climate/regulations.htm>. The draft ICR was placed in the docket.

The agencies received one comment directly related to the draft ICR. Volvo Group commented that assuming division of the hours used in the draft ICR are distributed equally among the 34 affected manufacturers, the total projected hours is 737 hours per OEM. The current burden on Volvo Powertrain for EPA engine criteria emissions for certification paperwork alone is in excess of 8,000 hours annually. This does not include time and expense for test personnel and equipment utilization. This burden will likely increase with engine CO2 requirements, and will increase significantly with the addition of the subject vehicle regulations given the complexity of the certification process.

The agencies have re-evaluated the burden estimates of the final rulemaking reflecting the comments received regarding the ICR. The final ICR reflects significantly greater number of hours and costs of compliance. For example, as shown in Table 6-10, the agencies estimate that each tractor manufacturer will assume an annual labor burden of 8,191 hours, spend \$250,000 in start up costs and an additional \$40,800 in contracting costs for the first year of compliance for combination tractor manufacturers.

3(c) Consultations

The new fuel consumption and emissions standards, including the cost analysis that is reflected in this ICR, were developed based on experience with similar regulations developed in the past in close consultation with the affected industry. Throughout the development of this rule, EPA and NHTSA also met extensively with individual manufacturers, groups of manufacturers, industrial trade associations, public interest groups, environmental and professional industry organizations. Their comments have been reflected in the burden estimates discussed below. The agencies wish to thank them and their colleagues for their assistance in preparing this report.

3(d) Effects of Less Frequent Collection

The CAA states that emission certification must be done on a yearly basis (CAA 206(a)(1)), coinciding with the industry's 'model year'. Major product changes typically occur at the start of a model year. For these reasons, a collection frequency of less than a model year is not possible. However, when an engine or vehicle design is "carried over" to a subsequent model year, the amount of new information required is substantially reduced. Existing regulations also call for an end-of-year report, with final production numbers, and the HD National Program conforms to this existing requirement as well.

3(e) General Guidelines

Under sections 1036.250 and 1037.250 of the final regulations, copies of all documents sent to EPA including, pre-model reports, certification applications, ABT, and end-of-the-year reports, must be kept and maintained for eight years. These records may be stored in any format and on any media, as long as they are organized and can be sent promptly to EPA, if requested. These recordkeeping requirements stem, in part, from the statutory requirement to warrant some items for long periods of time. Manufacturers also must comply with requirements to submit to an EPA audit, and recall vehicles and engines failing to meet emission standards during their useful lives. Other data, (such as routine emissions tests, i.e.: test cell temperatures and relative humidity readings, etc.) need to be kept for only one year after a certificate of conformity is issued.

Manufacturers are required to submit confidential business information such as sales projections and certain

sensitive technical descriptions (see section 4(b)(i) for reference). This information is kept confidential in accordance with the Freedom of Information Act, EPA regulations at 40 CFR Part 2, and class determinations issued by EPA's Office of General Counsel. Also, non-proprietary information submitted by manufacturers is held as confidential until the specific vehicle or engine to which it pertains is available for purchase.

No other general guideline is exceeded by this information collection.

3(f) Confidentiality

Manufacturers are allowed to assert a claim of confidentiality over information provided to EPA. Confidentiality is provided in accordance with the Freedom of Information Act and EPA regulations at 40 CFR Part 2. For further detail, refer to section 3(e), above.

3(g) Sensitive Questions

No sensitive questions are asked in this information collection. This collection complies with the Privacy Act and OMB Circular A-108.

4. Respondents and Information Requested

4(a) Respondents/NAICS Codes

Respondents are manufacturers of engines and vehicles within the North American Industry Classification System (NAICS) and use the coding structure as defined by NAICS.

4(b) Information Requested

All manufacturers are required to provide pre-model year production and related data in either a pre-model year report or as part of their application for a certificate of conformity. Data included in the pre-model year report and application will provide the best estimate of the vehicles and engines that a manufacturer will produce for the year and are needed to help construct an annual testing plan. Information that manufacturers will include in their pre-model year reports and certification applications, such as projected production estimates, are outlined in the sections below.

NHTSA requires manufacturers to determine equivalent fuel consumption values from CO2 emissions test results and provide the values along with the applications for certification submitted to EPA. Manufacturers will submit their pre-model year reports, applications, test data and related information to EPA electronically via a single database system that NHTSA will access as needed.

In order to obtain a certificate of conformity, all manufacturers must complete a compliance demonstration, normally consisting of test data showing that their engines or vehicles meet the rule's emission standards and other regulatory requirements. For testing purposes, manufacturers typically establish either "test groups" or engine and vehicle "families" that share certain design and emissions characteristics.

Specific criteria for establishing these test groups and families for each regulatory category is outlined in the rule §1036.230 (engines) and §1037.230 (heavy duty pickup trucks and vans, vocational vehicles and combination tractors). Within the families and test groups a manufacture establishes, engines and vehicles are selected and subject to actual testing.

In addition to test results and related documents that demonstrate compliance, an application for a certificate of conformity describes other key aspects of the manufacturer's proposed product line, such as controls put in place to reduce GHG emissions, warranty and service information, and emission control

information labels.

All manufacturers also are required to submit end-of-year (EOY) production reports that will be used to reconcile pre-model production estimates with final year figures. Manufacturers also must state whether they intend to participate in the Average, Banking and Trading (ABT) program that EPA and NHTSA have developed for each regulatory category. The EOY reports also are necessary for the ABT program since they are a resource for identifying emissions credits and deficits. For manufacturers not participating in ABT, the EOY reports are required to assess compliance. A summary of the data included in an EOY report is listed in Table 4-1.

Table 4-1
Summary of Required Information for End of Year and Final Reports

Vehicle family or test group designation and averaging set
Vehicle emissions and fuel consumption standards including any alternative standards used
Vehicle family FELs
Final production volumes
Certified test cycles
A credit plan identifying the manufacturers actual credit balances, credit flexibilities, credit trades and a credit deficit plan if needed demonstrating how it plans to resolve any credit deficits that might occur for a model year within a period of up to three model years after that deficit has occurred
A plan describing the vehicles that were exempted such as for off-road or small business purposes
A plan describing any alternative fueled vehicles that were produced for the model year identifying the approaches used to determine compliance and the production volumes

In addition, all manufacturers will be required to retain records per the provisions in 40 CFR parts 1036 and 1037, as outlined in Table 4-2.

Table 4-2
Key Recordkeeping requirements, HD National Certification Program

Records are to be kept for eight years, except routine emission records that are to be kept for only one year.

Information Item	*Engine Manufacturers	Vehicle Manufacturers
General records:	1036.205	1037.205
Identification and description of all engines and vehicles for which testing is required		
Description of emission control system		
Description of test procedures and supporting documents demonstrating compliance		
Individual Records:	1036.825	1037.825
Copies of all applications submitted		
Test records, instructions and other data provided to or received from other manufacturers (for example: emissions-related engine installation instructions, instructions for air conditioning installation, etc.)		
A complete record of all emission tests performed		
A complete record of all model inputs		
Record and description of each test performed to diagnose engine and vehicle emissions		

The rule has an effective date in time for model year 2014. Under this timeframe, manufacturers will begin to test and submit their applications and other pre-production documents to EPA and NHTSA in 2013. The time horizon of this ICR is intended to cover the annualized impacts of the rule at the time that manufacturers initiate their testing and compliance activities.

(i) Data Items

In addition to the data items described above, brief summaries of the new data items the agency collects from engine manufacturers and the three regulatory categories of the heavy duty truck manufacturers covered by the rule are provided below. Detailed lists of these data items are given in Tables 4-3 through 4-11.

*Heavy Duty Pick Up Trucks and Vans
Testing and Certification*

The vast majority of heavy duty pickup trucks and vans are designed, manufactured and sold by manufacturers as complete vehicles, and many of these truck and van models already are certified to vehicle-based emission standards for criteria pollutants. Further, these heavy duty truck/van models typically are based on higher sales volume light duty truck/van designs and models, which already are subject to GHG emission and fuel economy standards under the joint light-duty vehicle program promulgated by EPA and NHTSA in March 2010.

Thus, the HD national certification program closely tracks existing test procedures and reporting programs already in place for vans and pickup trucks. For example, the test procedures, GHG and fuel consumption standards for heavy duty pickup trucks and vans apply to the complete vehicle, just as similar

procedures and standards apply to complete light duty trucks and vans (there are no separate engine and vehicle requirements, such as those that exist for vocational vehicles and combination tractors).

As another, more specific example, the final rules require that HD pickup and van testing be conducted using the same heavy-duty chassis test procedures currently used by EPA for measuring the criteria pollutant emissions from these vehicles. Notably, this test procedure has been modified to include the highway fuel economy test cycle (HFET) and other additions, which will effectively test HD pickups and vans for GHG emissions and fuel consumption.

Using test procedures, reporting and compliance requirements from already established and proven test protocols and programs that are applicable to HD pickup trucks and vans helps to minimize test costs and reporting burdens for this category of the HD National Program. Burdens are further reduced for HD pickup truck and van manufacturers because manufacturers already have invested in test facilities and equipment for the light duty trucks and vans that they also produce.

Nonetheless, the standards for HD trucks and vans are unique and are expected to create new testing burdens and reporting requirements. Specifically, EPA and NHTSA have established weight-based attributes, namely payload and towing capacity, which support the GHG emission and fuel consumption limits for this vehicle category. Manufacturers are required to apply these attributes when establishing vehicle test groups to demonstrate compliance with the CO₂ and fuel consumption standards. These attributes also are factored into the production volume-weighted calculation of a manufacturer's annual fleet average compliance requirement.

For demonstrating compliance with the new N₂O and CH₄ standards, EPA believes that the current test group concept used by pickup truck and van manufacturers is appropriate because the technologies employed to control N₂O and CH₄ emissions are generally the same as those used to control criteria pollutants.

However, by applying weight-based attributes to establish CO₂ and fuel consumption standards for HD pickup trucks and vans, EPA and NHTSA expect that, especially in the first year of the program, manufacturers will find it in their best interest to test multiple vehicle configurations with a given test group to accurately estimate the fleet average CO₂ emission levels. Ultimately these additional tests and estimates are necessary to demonstrate compliance.

To address any unnecessary testing burdens, EPA and NHTSA are working with pickup truck and van manufacturers and other stakeholders to establish procedures for using analytically derived fuel economy (ADFE) to estimate CO₂ emission levels based on test data that is acquired from the coast down and chassis testing that is conducted. Assuming guidance is developed for using ADFE to estimate CO₂ emissions, EPA and NHTSA expect that the number of HD pickup trucks and vans to be tested (coast down and chassis) during the second and third years of the program will be significantly reduced, as indicated in Tables 6-4 and 6-5.

EPA is requiring manufacturers to meet the air conditioning leakage standard. To demonstrate compliance, the vehicle manufacturer must calculate the percent leakage rate of the hydrofluorocarbon (HFC) emissions from the air conditioning system by dividing the total leakage rate in grams per year by the refrigerant capacity as specified in 40 CFR 1037.115(c). The agency has adopted a test procedure for determining leakage rate that is consistent with the one adopted for Light Duty GHG, and therefore familiar to the HD pickup truck and van manufacturers.

The final rule also requires manufacturers to identify any vehicle exemptions and other flexibilities afforded for heavy-duty pickups and vans. A summary of the required information for the pre-model reports that manufacturers will submit, outlining these and other data submissions are summarized in Table 4-3.

Table 4-3

Required Information for pre-model year reports Heavy-duty Pickup Truck and Van Manufacturers
A list of each unique vehicle configuration included in the manufacturer's fleet describing the make and model designations, attribute based-values (GVWR, GCWR, Curb Weight and drive configurations) and standards
The emission and fuel consumption fleet average standard derived from the unique vehicle configurations
The estimated vehicle configuration, test group and fleet production volumes
Expected CO ₂ , N ₂ O, CH ₄ , and HFC emissions and fuel consumption test group results and fleet average performance
A statement declaring whether the manufacturer chooses to comply early in MY 2013 for EPA and NHTSA. The manufacturers must acknowledge that once selected, the decision cannot be reversed and the manufacturer will continue to comply with the fuel consumption standards for subsequent model years
A statement declaring whether the manufacturer will use fixed or increasing standards; acknowledging that once selected, the decision cannot be reversed and the manufacturer must continue to comply with the same alternative for subsequent model years
A statement declaring whether the manufacturer chooses to comply voluntarily with NHTSA's fuel consumption standards for model years 2014 through 2015. The manufacturers must acknowledge that once selected, the decision cannot be reversed and the manufacturer will continue to comply with the fuel consumption standards for subsequent model years;
The list of Class 2b-3 cab-complete vehicles and the method use to certify, as vocational vehicles and engines, or as complete pickups and vans identifying the most similar complete vehicles used to derive the target standards and performance test results
The list of Class 2b-3 incomplete vehicles and the method use to certify, as vocational vehicles and engines, or as complete pickups and vans identifying the most similar complete vehicles used to derive the target standards and performance test results
The list of Class 4 and 5 incomplete and complete vehicles and the method use to certify, as vocational vehicles and engines, or as complete pickups and vans identifying the most similar complete vehicles used to derive the target standards and performance test results
List of loose engines included in the heavy-duty pickup and van category and the list of vehicles used to derive target standards
Copy of any notices a vehicle manufacturer sends to the engine manufacturer to notify the engine manufacturers that their engines are subject to emissions and fuel consumption standards and that it intends to use their engines in excluded vehicles
A credit plan identifying the manufacturers estimated credit balances, planned credit flexibilities (i.e., credit balances, planned credit trading, innovative, advanced and early credits and etc.) and if needed a credit deficit plan demonstrating how it plans to resolve any credit deficits that might occur for a model year within a period of up to three model years after that deficit has occurred

For the purposes of this ICR, the agencies estimate that in the first year of the HD National Program manufacturers will identify at least four vehicle test groups for HD pickup trucks and four vehicle test groups for vans. At least six vehicles within each truck test group, and at least one vehicle within each van test group will need to be tested to demonstrate compliance with the fleet average, in-use, and where applicable, evaporative and refueling emission standards for CO₂. Test data accompanying these applications will include results from coast down and chassis tests. HD pickup trucks and vans also are subject to new HFC leakage, N₂O, and CH₄ standards and their applications will need to demonstrate how they are meeting the standards. The new testing requirement costs are identified as the following in Tables 6-4 and 6-5:

- Test/Gather CO₂, N₂O, CH₄, and HFC emission data on test vehicles
- Coastdown test
- Analyze CO₂, N₂O, CH₄, and HFC data to determine compliance

As shown in Tables 6-4 and 6-5, based on these estimates, EPA and NHTSA expect to receive a total of 24 applications for certificates of conformity each year from the heavy-duty pickup truck and van regulatory

category. Unlike the other regulatory categories discussed below, the manufacturers of heavy-duty pickup trucks and vans have recordkeeping systems in place for the existing criteria pollutant requirements, thus the agencies did not include a recordkeeping burden in this ICR. The requirements to develop the application for certification are identified as the following in Tables 6-4 and 6-5:

- Review of regulations
- Information technology upgrade to track GHG emissions (CO₂, N₂O, CH₄, and HFC) within the existing systems
- Prepare and submit certification application (including carryover applications)
- Collect and submit data for ADFE model
- Prepare and review GHG compliance plan
- End of year and final production reports

Engine Manufacturers

For engine manufacturers, the information and reporting burden associated with the National HD Program occur within the context of EPA's existing engine certification program for controlling criteria pollutants. In constructing a program to address GHG pollutants, EPA has built upon this existing infrastructure, thus creating minimal new certification testing and reporting requirements for engine manufacturers. For example, the agencies developed the GHG certification by building on the existing criteria pollutant certification template.

Also as an example, EPA believes that the selection criteria used to determine criteria pollutant engine families are equally applicable for defining CO₂ emissions performance, and that having two distinct family designations per engine (one for criteria pollutants and one for CO₂) would be overly burdensome without adding any benefit. Consequently the rule directs engine manufacturers to use the same selection criteria, as outlined in 40 CFR Part 86, Subpart N, to define a single engine family designation for both criteria pollutant and GHG emissions.

The requirements for engine manufacturers' application for certification are listed in Tables 4-4 and 4-5. The majority of these requirements will be reported to the agency through the HD engine certification template provided to manufacturers.

Table 4-4 Engine Manufacturers Section 1036.205
Description of engine families as related to requirements for GHG standards, including CO ₂ , CH ₄ and N ₂ O, as applicable
Description of emission control system, including auxiliary-emission control devices to be installed on production vehicles
Description of test engines selected for testing and rationale for selection
Description of test procedures and equipment, including alternate tests if applicable
Instructions for Engine Installation
Describe Label Information
Engine placement (combination tractors, vocational vehicles)
Intent to participate in Average, Banking & Trading and/or other available emissions credit programs
Family Certification Limits
Family Emission Limits
Statement of Compliance
Good-faith estimates of U.S. production volumes
End of Year (EOY) production reports
Amendment to certification application
Name of U.S.-based service agent

Table 4-5
Summary of Additional Information Required for Compliance - Engines

Submission	Applies to	Required Submissions Date	EPA Regulation Reference	NHTSA Regulation Reference
Small business exemptions	Engine manufacturers meeting the Small Business Administration (SBA) size criteria of a small business as described in 13 CFR 121.201.	Before introducing any excluded vehicle into U.S. for commerce	§1036.150	§535.8
Incentives for early introduction	The provisions apply with respect to tractors and vocational vehicles produced in model years before 2014	EPA must be notified before the manufacturer submits its applications for certificates of conformity	§1036.150	§535.8
Voluntary compliance for NHTSA standards	Engine manufacturers seeking early compliance in model years 2014 to 2016.	NHSAT must be notified before the manufacturer submits its applications for certificates of conformity	NA	§535.8
Model year 2014 N ₂ O standards.	Manufacturers that choose to show compliance with the MY 2014 N ₂ O standards requesting to use an	EPA must be notified before the manufacturer submits its applications	§1036.150	NA

	engineering analysis	for certificates of conformity		
Exemption from EOY reports	Manufactures with surplus credits at the end of the model year	90-days after the calendar year ends	§1036.730	§535.8
Alternative engine standards	Engine manufacturers not able to comply with 1036.104 and wanting to use the alternative engine standard.	EPA and NHTSA must be notified before the manufacturer submits its applications for certificates of conformity	§1036.150	§535.8
Alternate phase-in	Engine manufacturers that want to comply with alternate phase in standards.	EPA and NHTSA must be notified before the manufacturer submits its applications for certificates of conformity	§1036.150	§535.8

The existing HD criteria pollutant program requires engine labels per 40 CFR 86.007-35(a)(3). The GHG rule requires the addition of one identification requirement to the existing label, as listed in Table 4-6.

Table 4-6
Key labeling requirements, HD National Certification Program

Information Item	Engine Manufacturers
Engine Labels:	1036.135
Label your engines as described in 40 CFR 86.007-35(a)(3)	
Additional Engine GHG Labeling:	1036.135
Identify the emission control system. Use terms and abbreviations as described in 40 CFR 1068.45 or other applicable conventions.	1068.85
Identify any limitations on your certification. For example, if you certify heavy heavy-duty engines to the CO2 standards using only transient cycle testing, include the statement "VOCATIONAL VEHICLES ONLY".	1036.135
You may ask us to approve modified labeling requirements in this part 1036 if you show that it is necessary or appropriate. We will approve your request if your alternate label is consistent with the requirements of this part. We may also specify modified labeling requirement to be consistent with the intent of 40 CFR part 1037.	1036.135

Further, tests used today to demonstrate compliance with criteria pollutants also include provisions for measuring GHGs, and in the rule, compliance with NHTSA's fuel consumption standards and with EPA's GHG standards is established with these same tests, the Heavy Duty Federal Test Procedure (FTP) and Supplemental Engine Test (SET). However, depending on the type of vehicle in which the engine would be placed, manufacturers are required to identify relevant test results (steady state, transient or steady state and transient

test results) in their certification application. The agencies calculated the burden of these activities in Tables 6-6 and 6-7 as the “Testing/Gathering emission data on test vehicles” and “Analyze data to determine compliance” costs.

In addition, engine manufacturers are required to report CH4 and N2O at the time of certification. Although CH4 emissions can be accurately measured using existing engine tests and equipment, manufacturers typically do not have the equipment to measure N2O emissions. In the first year of the program, manufacturers have the option of directly measuring N2O or submitting a compliance statement based on good engineering judgment. As shown in Table 6-6, the ICR assumes that engine manufacturers will test and report N2O emissions in the first year of the program and has identified this cost as “N2O Analyzer Investment.”

With the exception of these new certification requirements for heavy duty engines, the existing compliance structure that engine manufacturers use for criteria pollutants is also valid for demonstrating compliance with the GHG regulations. Specifically, engine manufacturers may utilize the emissions, warranty and service programs already in place for CO2, CH4 and N2O as outlined in 40 CFR Part 86.

As a consequence, with the exception of their initial investment in N2O test equipment, and the time involved in acquiring experience to operate this equipment, the burden associated with submitting engine certification applications, EOY reports and other data is minimal. This information will simply be integrated into the existing data already submitted to EPA. This ICR assumes and reflects the cost burden to report this new information for 12 heavy-duty engine manufacturers that on average will submit nine applications each, for a total of 108 engine certification applications. The requirements to develop the application for certification are identified as the following in Tables 6-6 and 6-7:

- Review of regulations
- Prepare and submit certification application (including carryover applications)
- Prepare and review GHG compliance plan
- End of year and final production reports
- Store, file and maintain records

Vocational Vehicles and Combination Tractors

Unlike the engine and pickup truck and van segments of the HD truck sector, fuel consumption and emissions from vocational vehicles and combination tractors have been largely unregulated, and EPA recognizes that the HD National Program presents these segments with several new testing, reporting, recordkeeping, and labeling requirements, as shown in Tables 4-7 through 4-11. The reporting requirements for the application for certification are covered in the HD GHG Vehicle application for certification template.

**Table 4-7
Required Information for Certification Applications
Vocational Vehicle Chassis and Tractor Manufacturers (553.8)**

A description of the vehicle family’s specifications and other basic parameters of the vehicle’s design and emission controls. List the fuel type on which the vehicles are designed to operate (for example, ultra low-sulfur diesel fuel).
An explanation of how the emission control system operates. As applicable, describe in detail all system components for controlling greenhouse gas and evaporative emissions, including all auxiliary emission control devices (AECs) and all fuel-system components will be installed on any production vehicle. Identify the part number of each component you describe. Treat as separate AECs any devices that modulate or activate differently from each other.
For vehicles subject to air conditioning standards, include: (1) The refrigerant leakage rates (leak scores). (2) The refrigerant capacity of the air conditioning systems. (3) The corporate name of the final installer of the air conditioning system.
A description of any vehicles selected for testing and the reasons for selecting them.
A description of any test equipment and procedures that were used, including any special or alternate test procedures used

(see § 1037.501).
A description of how any emission-data vehicle was operated before testing, including the duty cycle and the number of vehicle operating miles used to stabilize emission levels. Explain why this method of service accumulation was selected. Include a description of any scheduled maintenance performed.
A list of the specifications of any test fuel used to show that it falls within the required ranges specified in 40 CFR part 1065.
Identification of the vehicle family's useful life.
The maintenance instructions and warranty statement that will be provided to the ultimate purchaser of each new vehicle (see §§ 1037.120 and 1037.125).
A description of the vehicle's emission control information label (see § 1037.135).
Identify the emission standards or family emission limits (FEL)s to which you are certifying vehicles in the vehicle family. For families containing multiple subfamilies, this means that you must identify multiple CO ₂ FELs. For example, you may identify the highest and lowest FELs to which any of your subfamilies will be certified and also list all possible FELs in between (which will be in 1 g/ton-mile increments).
Where applicable, identify the vehicle family's deterioration factors and describe how they were developed. Present any emission test data used for determining the deterioration factors (see §1037.241(c)).
Where applicable, state that you operated your emission-data vehicles as described in the application (including the test procedures, test parameters, and test fuels) to show you meet the requirements of this part.
Present evaporative test data to show your vehicles meet the evaporative emission standards specified in subpart B of this part, if applicable. Report all valid test results from emission-data vehicles and indicate whether there are test results from invalid tests or from any other tests of the emission-data vehicle, whether or not they were conducted according to the test procedures of subpart F of this part. You may be required to report these additional test results. You may be asked to send other information to confirm the validity of test data.
Report modeling results for ten configurations. Include modeling inputs and detailed descriptions of how they were derived. Unless otherwise specified, include the configuration with the highest modeling result, the lowest modeling result, and the configurations with the highest projected sales.
A description of all adjustable operating parameters (see § 1037.115), including production tolerances. It is not necessary to include parameters that do not affect emissions covered by the application. Include the following in your description of each parameter: (1) The nominal or recommended setting. (2) The intended physically adjustable range. (3) The limits or stops used to establish adjustable ranges. (4) Information showing why the limits, stops, or other means of inhibiting adjustment are effective in preventing adjustment of parameters on in-use vehicles to settings outside the intended physically adjustable ranges.
A statement that unconditionally certifies that all the vehicles in the vehicle family comply with the requirements of the Clean Air Act.
Good-faith estimates of U.S.-directed production volumes by subfamily. You may be required to describe the basis of your estimates.
Other information, such as information required by § 1037.725 if participating in the ABT program.
Other applicable information, such as information specified in this part or 40 CFR part 1068 related to requests for exemptions.
Name an agent for service located in the United States. Service on this agent constitutes service on the manufacturer or any of the manufacturer's officers or employees for any action by EPA or otherwise by the United States related to the requirements of these regulations.

Table 4-8: Key Information Items Requested: HD National Certification Program

Vehicle Manufacturers
Section 1037.205
Description of vehicle families as related to requirements for GHG standards, including CO2 and HFC, as applicable
Description of emission control system, including auxiliary-emission control devices to be installed on production vehicles
Description of test vehicles selected for testing and rationale for selection
Description of test procedures and equipment, including alternate tests if applicable
Describe Label Information
Intent to participate in Average, Banking & Trading and/or other available emissions credit programs
Family Emission Limits
Statement of Compliance
Good-faith estimates of U.S. production volumes
End of Year (EOY) production reports
Amendment to certification application
Name of U.S.-based service agent

Table 4-9
Summary of Additional Information Required for Compliance – Vocational Vehicles

Submission	Applies to	Required Submissions Date	EPA Regulation Reference	NHTSA Regulation Reference
Small business exemptions	Vehicle manufacturers meeting the Small Business Administration (SBA) size criteria of a small business as described in 13 CFR 121.201.	Before introducing any excluded vehicle into U.S. commerce	§1037.150	§535.8
Incentives for early introduction	The provisions apply with respect to tractors and vocational vehicles produced in model years before 2014	EPA must be notified before the manufacturer submits its applications for certificates of conformity	§1037.150	§535.8
Voluntary compliance for NHTSA standards	Vehicle manufacturers seeking early compliance in model years 2014 to 2016.	NHSAT must be notified before the manufacturer submits its applications for certificates of conformity	NA	§535.8
Approval of alternate methods to determine drag coefficients	Tractors meeting § 1037.106	EPA must be notified before the manufacturer submits its applications for certificates of conformity	§1037.150	§535.8
Off-road exemption	Manufacturers wanting to exclude tractors from vehicle standards	EPA must be notified before the manufacturer submits its applications for certificates of conformity	§1037.150	§535.8
Vocational Tractor	Manufacturers wanting to reclassify tractor as vocational tractors making them applicable to vocational vehicle standards	EPA must be notified before the manufacturer submits it applications for certificates of conformity	§1037.150	§535.8

Exemption from EOY reports	Manufactures with surplus credits at the end of the model year	90-days after the calendar year ends	§1037.730	§535.8
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Table 4-10
Summary of Additional Information Required for Compliance – Tractors

Submission	Applies to	Required Submissions Date	EPA Regulation Reference	NHTSA Regulation Reference
Small business exemptions	Vehicle or engine manufacturers meeting the Small Business Administration (SBA) size criteria of a small business as described in 13 CFR 121.201.	Before introducing any excluded vehicle into U.S. commerce	§1037.150	§535.8
Incentives for early introduction	The provisions apply with respect to tractors and vocational vehicles produced in model years before 2014	EPA must be notified before the manufacturer submits it applications for certificates of conformity	§1037.150	§535.8
Air condition leakage exemption for vocational vehicles	Vocational Vehicles excluded from § 1037.115	EPA must be notified before the manufacturer submits it applications for certificates of conformity	§1037.150	§535.8
Model year 2014 N ₂ O standards.	Manufacturers that choose to show compliance with the MY 2014 N ₂ O standards requesting to use an engineering analysis	EPA must be notified before the manufacturer submits it applications for certificates of conformity	§1037.150	§535.8
Exemption for electric vehicles	All electric vehicles are deemed to have zero exhaust emissions of CO ₂ , CH ₄ , and N ₂ O	End of December prior to model year	§1037.150	§535.8
Off-road exemption	Manufacturers wanting to exclude vocational vehicles from vehicle standards	EPA must be notified before the manufacturer submits it applications for certificates of conformity	§1037.150	§535.8
Exemption from EOY reports	Manufactures with surplus credits at the end of the model year	90-days after the calendar year ends	§1037.730	§535.8

Table 4-11
Key labeling requirements, HD National Certification Program

Information Item	Vehicle Manufacturers
Vehicle Labels:	1037.135
Assign each vehicle a unique identification number and permanently affix, engrave, or stamp it on the vehicle in a legible way. The vehicle identification number (VIN) serves this purpose.	1037.135
At the time of manufacture, affix a permanent and legible label identifying each vehicle.	1037.135
The label must include information contained in 1037.135(c).	1037.135
You may add information to the emission control information label to identify other emission standards that the vehicle meets or does not meet (such as European standards). You may also add other information to ensure that the vehicle will be properly maintained and used.	1037.135
You may ask us to approve modified labeling requirements in this part 1037 if you show that it is necessary or appropriate. We will approve your request if your alternate label is consistent with the requirements of this part.	1037.135
Additional Vehicle GHG Labeling:	
The original vehicle manufacturer of an off-road vocational vehicle must apply a removable label meeting the requirements of 40 CFR 1068.45 that identifies the corporate name of the original manufacturer and states that the vehicle is exempt under the provisions of § 1037.620. The name of the certifying manufacturer must also be on the label or, alternatively, on the bill of lading that accompanies the vehicles during shipment. The original manufacturer may not apply a permanent emission control information label identifying the vehicle's eventual status as a certified vehicle.	1037.615
You must include the following additional statement on the vehicle's emission control information label for a vocational tractor under §1037.135: "THIS VEHICLE WAS CERTIFIED AS A VOCATIONAL TRACTOR UNDER 40 CFR 1037.630."	1037.630

The requirements to develop the application for certification are identified as the following in Tables 6-8 through 6-11:

- Review of regulations and guidance document
- Prepare and submit certification application (including carryover applications)
- Labeling requirements
- Final year production and ABT update
- Store, file, and maintain records

For both these vehicle categories, the CO₂ and fuel consumption standards focus on reductions that can be achieved primarily through changes to vehicle systems, such as tires, and some modifications to vehicle design. Both the fuel consumption and CO₂ standards are expressed in terms of moving a ton of freight over one mile: the fuel consumption standard is represented as gallons of fuel used to move one ton of freight (payload) 1000 miles, or gal/1000 ton-mile; and the CO₂ vehicle standards are represented as grams of CO₂ per ton-mile. Neither vocational vehicles nor combination tractors are subject to N₂O or CH₄ emission standards, but tractors equipped with air conditioning are subject to HFC leakage standards.

To help reduce testing and reporting burdens on vocational vehicle chassis and combination tractor manufacturers, EPA has developed a truck simulation model, the Greenhouse gas Emissions Model (GEM). The GEM

was developed for manufacturers to demonstrate compliance with the new GHG standards. Under the rule, manufacturers evaluate and report CO₂ emissions and fuel consumption through a simulation of their vehicles using GEM. GEM is directly available to vocational vehicle chassis and combination tractor manufacturers as a download from the internet, at no cost. Outputs from the GEM model also generate summary data that can be integrated into the application for a certificate of conformity.

EPA has programmed the GEM with two sets of predefined parameters; one set of parameters for vocational vehicles, and a second set of parameters for combination tractors. Values for these predefined parameters are detailed in the rule, and include several key vehicle characteristics common to the vocational vehicle and combination tractor configurations subject to CO₂ and fuel consumption limits.

These characteristics include vehicle frontal area dimensions; total and payload weight; engine/transmission/wheel inertia, accessory load, axle base, tire radius, and engine fuel map, among others. Additional predefined inputs, unique to combination tractors, such as trailer tire coefficient of rolling resistance (Crr), also are included.

These preprogrammed inputs substantially reduce the testing burden on manufacturers of vocational vehicle chassis and combination tractors. For example, the GEM provides an alternative to chassis and other tests traditionally performed in a laboratory or on the road.

Manufacturers will however, be required to test their vehicles, collect data and input at least two key data elements (based on testing) prior to running GEM. As discussed below, these two inputs are: 1) the coefficient of rolling resistance (Crr) of the vehicle's steer and drive tires; and (for combination tractors) 2) the aerodynamic drag (expressed as the vehicle's coefficient of drag area or "CdA") of a truck.

Additional inputs needed to run the GEM include basic information, such as manufacturer name, vehicle family and configuration, and model year.

The new testing requirement costs are identified as the following in Tables 6-8 through 6-11:

- Tire testing
 - Tractor coefficient of drag testing (using coastdown, wind tunnel, and CFD)
 - Collect, input data for the Greenhouse Gas Emissions Model (GEM), and run model
- Analyze data to determine compliance

Tire Rolling Resistance

Both vocational vehicle chassis and combination tractor manufacturers will need to determine the rolling resistance of a vehicle's steer and drive tires from either their tire suppliers or by testing the tires using the test method adopted by the International Organization for Standardization, ISO 28580:2009.

Specifically, the ISO test must be conducted on three tire samples within each tire model one time each to account for some production variability. Details for conducting the ISO test are specified in the rule (§1037.520(c)). In summary, the average of the three tests would be the rolling resistance coefficient value for use as an input into the GEM. Whether tested in-house, or contracted out, this ICR assumes a cost of \$300 for each tire model tested. The ICR further assumes that each manufacturer (vocational vehicle chassis and combination tractor) will need to test 10 tire models for each vehicle family or certification application that is submitted for the first year of certification. In subsequent years, the manufacturers will be able to carry-over tire test results so the agencies assumed one new tire will be tested for each application for each manufacturer.

Although the results of the tire tests do not need to be submitted as part of the certification application, the Crr is needed to run GEM and demonstrate compliance with the rule's CO₂ and fuel consumption standards. Test results are to be maintained for 8 years, as required under (§1037.825).

Aerodynamic Assessment

In addition to providing inputs on the rolling resistance of their steer and drive tires, combination tractor manufacturers must also establish the GEM inputs for the aerodynamic drag – expressed as the coefficient of drag or “CdA” – of their vehicles. Vocational vehicle chassis manufacturers are not subject to this requirement to test and establish drag for their vehicles.

Manufacturers must determine a combination tractor’s CdA through testing, which then is to be used as an input into the GEM. Under the rule, manufacturers may choose from test methods to assess the aerodynamics of their vehicle and establish appropriate CdA values. These test methods include coastdown testing, wind tunnel testing and computational fluid dynamics.

To estimate the cost associated with testing combination tractors to establish a CdA, this ICR assumes that in the first few years of the program manufacturers will contract out virtually all their testing needs. Procedures for conducting coastdown tests are specified in (§1037.520(b)) of the rule; procedures for conducting wind tunnel testing can be found in (§1037.521(c)) of the rule. Detailed guidance on the role of computational fluid dynamics in establishing a CdA for specific tractor models can be found in (§1037.521(d)).

Importantly, tractor manufacturers must conduct coastdown testing on at least one truck. Based on the CdA established from coastdown testing, manufacturers have the option of developing an adjustment factor that can be applied to assess the aerodynamic drag of other trucks. If a manufacturer chooses to develop this adjustment factor, it must also conduct alternate aerodynamic testing on the same truck that was subject to the coastdown test. The rule also provides guidance on using the coastdown and alternate aerodynamic test results (from the same truck) to establish this adjustment factor (§1037.521(a)).

As stated, at this time the agencies recognize that manufacturers may not have the facilities or onsite expertise necessary to conduct either coast down or alternate aerodynamic testing in house. Consequently, the ICR assumes that manufacturers will work with testing contractors that possess the expertise and facilities to meet the rule’s testing requirements.

Further, the contract costs (operations and maintenance, or “O&M”) presented in Table 6-10 assume that tractor manufacturers will choose to derive and apply an adjustment factor to establish the CdA for their trucks. As specified in the rule, this factor can only be used in conjunction with actual alternate aerodynamic tests conducted on vehicles that are selected to represent specific vehicle families.

Thus, as shown in Table 6-10, testing burdens for tractor manufacturers are presented as O&M costs, based on the assumption that manufacturers will contract out the testing – coastdown and wind tunnel - needed to establish the CdA for their vehicles, and subsequently to run the GEM.

Tractor manufacturers also will have options for including other parameters in the GEM, if their vehicles are equipped with technologies to reduce idling, lower vehicle weight and limit speed.

Although this data is not reported as a GEM input, at the time of certification, tractor manufacturers also will be required to outline the design of their air conditioning systems used in cabs, and an HFC leakage score. Test procedures for establishing an HFC leakage score are detailed in §1037.115(c).

The ICR assumes that 15 vocational vehicle chassis manufacturers, on average, will identify four vehicle families and that the agencies will receive a total of 60 applications for certificates of conformity from this regulatory category.

The agencies expect to receive an additional 36 applications from manufacturers of combination tractors

(on average nine applications from four manufacturers). The four tractor manufacturers also manufacture the vocational vehicles accounted for in the ICR.

However, these manufacturers operate distinctly different truck divisions and based on significant differences in vehicle design, the agencies expect to receive a total of 96 applications for certificates of conformity from the vocational vehicle and tractor categories.

(ii) Respondent Activities

The types of activities a manufacturer would do to certify an engine or vehicle family are as follows:

- Review the regulations and guidance document
- Prepare and submit pre-model year reports or related production data for certification applications
- Develop engine or vehicle “test” or “family” groups
- Test engines and vehicles for compliance with emission and fuel consumption standards
- Gather and analyze test results
- Collect inputs and run GEM, as needed
- Submit the Application for Certification
- Label certified vehicles
- Prepare and submit carryover applications
- Prepare GHG compliance plan and reports, as needed
- Prepare and submit End of Year Production reports
- Store, file and maintain records

In the first year of program implementation, the ICR assumes significant labor hours associated with reviewing regulations and guidance, analyzing test data and preparing certification applications that demonstrate compliance with EPA/NHTSA’s GHG and fuel consumption standards for medium- and heavy-duty engines and vehicles. In years two and three, these hours are significantly reduced as the certification program for all vehicles and engines allow manufacturers to carry certification test data over from one model year to the next when no significant changes to models years are made. The policy applies to CO₂, N₂O and CH₄ test data.

5. The Information Collected--Agency Activities, Collection Methodology, and Information Management

5(a) Agency Activities

As part of the implementation of the certification programs, EPA and NHTSA officials carry out the following activities:

- Review and interpret regulations, provide guidance
- Review certification applications for completeness and accuracy
- Verify that the correct engines and vehicles have been selected and tested
- Answer questions from manufacturers and the public
- Issue appropriate certificates of conformity
- Periodically perform maintenance or enhance the database
- Make data available to the public
- Analyze and manage requests for confidentiality
- Determining if "carry over" of data from a previous model year is appropriate or if new testing will be required
- Review End-of-Year production reports
- Store, file and maintain data

5(b) Collection Methodology and Management

EPA and NHTSA currently make extensive use of computers in collecting information from vehicle manufacturers. Essentially all applications for certification and related product descriptions, test results, ABT and end of year reports, etc. will be submitted electronically through a single point of entry to a database that both EPA and NHTSA can access. Once the data is received, the information is uploaded, monitored and reviewed for completeness by EPA and NHTSA.

The public can access non-confidential portions of the certification applications and test data by contacting CD or through the Certification Information Center at <http://www.epa.gov/otaq/certdata.htm>.

5(c) Small Entity Flexibility

As discussed in the preamble of the regulation, the respondent class for this rule is defined to exclude those manufacturers who would fall into the definition of small business entities, except for a once-per-year declaration of small business status.

5(d) Collection Schedule

Information must be submitted prior to and after the end of each “model year” that a manufacturer intends to build (or import) vehicles. For emissions and fuel consumption purposes, a “model year” is statutorily defined as the annual production period of a manufacturer, as decided by the Administrator, that includes January 1 of that calendar year; or that calendar year if the manufacturer does not have an annual production period.

During the model year, the results of such additional fuel consumption and greenhouse gases tests as the manufacturer conducts are also reported to EPA and NHTSA. After the end of the model year fleet-wide greenhouse gasses emissions are reported. If a product is unchanged between model years, much of the information can be “carried over.” The collection frequency and burden are determined to a large extent by the manufacturer’s marketing and production plans. However, as required by law, some submission is required for each model year’s production.

6. Estimating the Burden and Cost of the Collection

Tables 6-4, 6-6, 6-8, and 6-10 at the end of this section provide details on collections costs in the first year of program implementation. Tables 6-5, 6-7, 6-9 and 6-11 represent costs in years two and three of the program. These tables represent burdens and costs for manufacturers of HD engines and the three new vehicle categories covered by the HD National Program.

6(a) Estimating Respondent Burden

Burden estimates were taken from the previous ICRs and adjusted to reflect EPA experience in these and other similar programs.

6(b) Estimating Respondent Costs

(i) Estimating labor costs

To estimate labor costs, EPA used the Bureau of Labor Statistics’ National Industry-specific Occupational Wage Estimates (2009) for the Manufacturing Industry (NAICS 31-33), Transportation Equipment Manufacturing Subsector (NAICS 336) and the Professional, Scientific, and Technical Services Sector (NAICS 54). These rates were increased by a factor of 2.1 to account for benefits and overhead. The specific rates used are listed below in Table 6-1. These are mean hourly rates.

**Table 6-1
Labor Costs Estimates**

Occupation	Mean Hourly Rate (BLS)	Mean Hourly Rate (Including benefits and Overhead)
Mechanical Engineers	\$39.16	\$82.24
Engineering Managers	\$50.71	\$106.50
Test Cell Operator	\$23.05	\$48.40
Lawyers	\$65.81	\$138.20
Secretaries, Except Legal, Medical and Executive	\$14.95	\$31.39

(ii) Estimating Capital, Operations and Maintenance Costs

Operations and Maintenance costs include the non-labor costs associated with conducting new tests that are proposed for the model year 2014 and after. Costs are for contracted laboratory time, the use of test equipment, vehicle and engine parts, fuel and other supplies.

The agencies expect that manufacturers of vocational vehicle chassis and combination tractors will contract with testing firms for most of their testing. Under the regulations, both these manufacturers need to establish a coefficient of rolling resistance (Crr) for the tires they will specify for vehicles to demonstrate compliance with the new GHG and fuel standards. In addition, tractor manufacturers need to test vehicles for a coefficient of drag, or a CdA, also needed to demonstrate compliance.

Based on contract costs for running tests to establish Crr (ISO 28580) and Cd (coastdown and wind tunnel), these test costs amount to a total of \$180,000 for vocational vehicles and \$1.33 million (\$337,320 for Crr testing and \$992,680 for CdA testing) for tractors. As listed in Tables 6-8 through 6-11 below, these values estimate that each of the 15 vocational vehicle manufacturers will test 40 tires and each of the four tractor manufacturers will test 90 tires. The costs also include aerodynamic testing of vehicles which consist of one coastdown test, ten wind tunnel tests, ten full computational fluid dynamics (CFD) models, and 81 CFD iterations for each of the four tractor manufacturers.

(iii) Capital/Start Up Costs

Startup costs are one-time costs to implement the new requirements in the rule that normally are applicable to the first year of the program. These startup costs fall into three categories. First, are costs associated with information management. Second, are start up costs associated with acquiring test equipment. Third, are costs associated with equipment to generate vehicle labels.

For all manufacturers, the rule’s electronic reporting requirements will generate first-year start up costs for programming computer systems so that certification and related data can be submitted to EPA/NHTSA in the necessary formats. Since heavy-duty pickup truck, van and engine manufacturers already have computer systems and processes in place for reporting similar certification data, this start up cost is not so significant. Tables 6-4 and 6-6 reflect start-up costs for pickup truck/van manufacturers and engine manufacturers respectively.

The ICR assumes that in addition to software and programming costs, vocational vehicle chassis and combination tractor manufacturers will incur additional first-year start up costs for the purchase of hardware systems that will be dedicated to processing, reporting and storing records related to the rule’s requirements. These burdens are detailed in Tables 6-8 and 6-10.

Manufacturers of vocational vehicle chassis and tractors also will incur costs for the purchase of labeling equipment and a system for applying labels to their vehicles (pickup truck, van and engine manufacturers already label

their equipment. The final rule requires these manufacturers to develop labels that will allow field inspectors to identify whether a vehicle is certified. Details specifying the convention and information to be included on these labels has been published in §1037.135 of the regulations and is shown in Table 4-11 with the complete labeling requirements for vehicles. See Tables 6-8 and 6-10 for estimated costs for acquiring labeling equipment.

As indicated in Table 6-6, engine manufacturers will incur additional start up costs for the purchase of equipment to measure N2O. These costs assume that 12 engine manufacturers purchase two N2O analyzers at \$31,500 each, for a total investment of \$756,000.

6(c) Estimating Agency Burden

6(c) Estimating Agency Burden

Environmental Protection Agency (EPA)

Existing heavy duty certification and compliance programs are administered by EPA's Compliance Division (CD). CD works closely with the Agency's Laboratory Operations Division (LOD) to establish and implement testing programs that enable the Agency to ensure compliance with its mobile source emissions standards. Together CD and LOD have identified resources that are needed to support the National HD program, including FTE (full time equivalent) and information system upgrades.

Implementation of the HD GHG standards will be carried out in part by existing staff, but will rely primarily on the hiring of 10 new FTE. These new FTE will be split between developing and conducting HD test related activities -- both in the field and out of EPA's National Vehicle and Fuel Emissions Laboratory -- as well reviewing certification applications, evaluating test and related technical documents, and tracking credit programs.

We project 400 hours per week of staff time at \$80 per hour (loaded to include benefits and overhead) will be expended by the agency to manage compliance related to the new GHG emission and fuel consumption standards. This comes to 20,800 hours or \$1.664 million per year to oversee the requirements of the programs associated with this ICR. These labor estimates are based on Office of Personnel Management labor rates effective January 2011, with a 2.1 multiplier used to account for benefits and overhead.

In addition to FTE costs, the Agency will need to develop a HD engine and vehicle compliance information system. This system will serve as a single point of entry for manufacturers to submit and EPA to collect emissions and fuel economy compliance information. Both EPA and NHTSA will have access to this database system. EPA estimates it will incur a one-time development cost of \$1 million and ongoing, annualized support costs of \$150,000 for this database system. Therefore, the total EPA cost is \$2,814,000 per year for this rule as found in Table 6-3

Department of Transportation, National Highway Traffic Safety Administration (NHTSA)

NHTSA has an existing consumer average fuel economy program to increase the fuel economy performance of passenger cars and light trucks. The agency administers this program in conjunction with EPA and has four divisions in various program offices responsible for carrying out the activities of the program. These divisions include the CAFE rulemaking, enforcement and regulatory analysis divisions and the Office of the Chief Counsel. NHTSA is developing and plans to support its fuel consumption program for heavy-duty trucks as a part of its existing infrastructure for its LD CAFE program.

The agency plans to administer the HD program in the same manner it has historically done for the LD CAFE program. For both programs, manufacturers start the program each model year by submitting preliminary information in advance of the model year demonstrating their ability to comply with standards based on the test results of candidate makes and models. The information is used by EPA to conduct confirmatory testing and NHTSA conducts random audit verifications. Manufacturers continue to test the majority of their fleets throughout the model year and then submit final

reports after the model year ends to EPA. EPA verifies manufactures final demonstration results and submits the findings to NHTSA. NHTSA determines compliance with its standards using a credits balancing system and imposes fines if necessary.

Administering the HD program for NHTSA will require using 8 persons on its existing staff and hiring two new FTEs. One FTE will be an engineer and serve as the HD program's project manager for rulemaking activities and the second will be a program analyst responsible for tracking credits and carrying out enforcement activities.

NHTSA expects to expend 43.8 hours per week of staff time at cost of \$80 per hour (loaded to include benefits and overhead) to manage its compliance activities (98 percent of the total hours) for and fuel consumption standards. In total, NHTSA calculates that it will use 2,279 hours or \$182,368 per year to oversee the requirements of the programs associated with this ICR. These labor estimates are based on Office of Personnel Management labor rates effective January 2010, with a 2.1 multiplier used to account for benefits and overhead.

NHTSA will also incur cost for helping EPA maintain its compliance information database system. The final rule establishes a harmonized approach for the HD program by which manufacturers will submit compliance reports directly through the EPA system as the single point of entry for all GHG emission and fuel consumption information required for this national program. As a result, EPA will need to create access to its database system for NHTSA. NHTSA estimates that annual costs for contributing to maintain the EPA database in housing its fuel consumption information and ensure proper access to the data will cost approximately \$80,000 per year. This soft estimate is based upon NHTSA's experience with a web-based system of comparable size and complexity. However, no costs are assigned on NHTSA's part to enhance the system to meet our business requirements for this rule. EPA has agreed to assume all of these costs. Therefore, the total NHTSA cost is \$262,368 per year for this rule as found in Table 6-3.

6(d) Estimating the Respondent Universe and Total Burden and Costs

6(d)(1) Certification Estimates

There are 12 companies in this sector which manufacture on-highway heavy-duty engines and 15 companies that manufacture vehicles that will be required to meet the proposed new greenhouse gas emission standards. Notably, although EPA has established distinct standards for the three vehicle categories covered by this rule: 1) heavy duty pickup trucks/vans; 2) vocational vehicles; and 3) combination tractors -- many manufacturers are producing vehicles in more than one of these categories, and thus will be required to submit multiple certification applications.

In total, EPA projects that related to the HD National Program, it will receive 228 applications for certification, as follows:

Engine Manufacturers

Engine manufacturers and heavy-duty truck and van manufacturers are currently regulated by EPA and are already familiar with EPA regulations, policies and certification program. Under the proposed regulations, engine manufacturers will not be required to submit new certification applications, but will need to add CO₂, N₂O and CH₄ test information and results to their applications. EPA expects that it will receive approximately 108 such amended applications from engine manufacturers in the future.

HD Pickup Trucks and Vans

Although subject to regulation for non-GHG emissions in the past, heavy duty truck and van manufacturers have not been required to submit certification applications for GHG emissions and fuel consumption limits. To comply with the proposed new CO₂, N₂O and CH₄ emission and fuel consumption standards, EPA expects to receive 24 certification applications from heavy duty truck and van manufacturers.

Vocational Vehicle Chassis and Combination Tractors

From vocational vehicle chassis manufacturers EPA expects to receive 60 applications and from combination tractor manufacturers the Agency estimates it may receive 36 applications for certification in the first year and 32 applications in following years as we do not expect every manufacturer to produce tractors in each of the nine subcategories .

Table 6-2 below, summarizes the labor, start up and operations and maintenance costs associated with meeting the proposed GHG and fuel consumption standards. Tables 6-4 through 6-11 detail costs for the four categories of vehicle manufacturers affected by the proposal. These tables can be found starting on page 30.

6(e) Bottom Line Burden Hours and Cost Tables

(i) *Respondent Tally*

Bottom-line burden and cost estimates for the first three years of the HD National Program are shown in the table below. The table shows industry totals and values for each respondent by category by year. There is no burden on the respondents in years 2012-2013. The burden in the table represents the burden incurred beginning in year 2014, when the program becomes effective. The Summary of ICR Burden table in ROCIS includes the annualized values of 225 for the Annual Number of Responses, 41,305 hours of Annual Time Burden, and \$1,458,333 in Annual Cost Burden (Capital and O&M Costs).

**Table 6-2
Total Estimated Respondent Burden and Cost Summary**

Manufacturer Program	Number of Respondents	Number of Responses	Total Hours Per Year	Labor Costs	Annual Capital Costs	Annual O&M Costs	Total Annual Capital and O&M Costs	Total Labor, Capital, and O&M Costs
2014								
Engine Testing & Certification	12	108	2,970	\$ 243,025	\$756,000	\$0	\$756,000	\$ 999,025
HD Truck/Van Testing & Certification	3	24	9,852	\$ 808,385	\$75,000	\$0	\$75,000	\$ 883,385
Vocational Vehicle Testing & Certification	15	60	12,480	\$1,014,925	\$750,000	\$180,000	\$930,000	\$ 1,944,925
Combination Tractor Certification	4	36	32,762	\$2,329,168	\$1,000,000	\$1,330,000	\$2,330,000	\$ 4,659,168
2015								
Engine Testing & Certification	12	108	2,538	\$ 204,877	\$0	\$0	\$0	\$ 204,877
HD Truck/Van Testing & Certification	3	24	4,086	\$339,189	\$0	\$0	\$0	\$ 339,189
Vocational Vehicle Testing & Certification	15	60	9,900	\$ 809,689	\$0	\$18,000	\$18,000	\$ 827,689
Combination Tractor Certification	4	32	16,402	\$ 1,108,711	\$0	\$124,000	\$124,000	\$ 1,232,711
2016								
Engine Testing & Certification	12	108	2,538	\$ 204,877	\$0	\$0	\$0	\$ 204,877

HD Truck/Van Testing & Certification	3	24	4,086	\$ 339,189	\$0	\$0	\$0	\$ 339,189
Vocational Vehicle Testing & Certification	15	60	9,900	\$ 809,689	\$0	\$18,000	\$18,000	\$ 827,689
Combination Tractor Certification	4	32	16,402	\$1,108,711	\$0	\$124,000	\$124,000	\$ 1,232,711
2014-2016 TOTALS								
2014 Total		228	58,064	\$ 4,395,503	\$ 2,581,000	\$ 1,510,000	\$ 4,091,000	\$ 8,486,503
2015 Total		224	32,926	\$ 2,462,466	\$ -	\$ 142,000	\$ 142,000	\$ 2,604,466
2016 Total		224	32,926	\$ 2,462,466	\$ -	\$ 142,000	\$ 142,000	\$ 2,604,466
Three Year Total	34	676	123,916	\$9,320,435	\$2,581,000	\$1,794,000	\$4,375,000	\$13,695,435
Annualized Burden	34	225	41,305	\$3,106,812	\$860,333	\$598,000	\$1,458,333	\$ 4,565,145

(ii) *The Tally for the Agencies*

**Table 6-3
Total Estimated Agency Burden and Cost Summary**

Program	Number of Applications	Number of Activities	Total Hours Per Year	Total Labor Cost Per Year	Total Annual Capital Costs	Total Annual O&M Costs	Total Costs
EPA Emissions Certification	225	10	20,800	\$1,664,000	\$1,000,000	\$150,000	\$2,814,000
DOT Fuel Consumption	225	10	2,279	\$182,368	0	\$80,000	\$262,368
EPA & DOT TOTALS	225	20	23,079	\$1,846,368	\$1,000,000	\$230,000	\$3,076,368

6(f) Reasons for change in burden

This is new information collection and it represents a new burden resulting from new standards issued to address greenhouse gas (GHG) emissions and fuel consumption in the heavy-duty (HD) trucking sector. As a result of these standards, HD engine and HD vehicle manufacturers will be subject to new testing, reporting, and recordkeeping requirements

6(g) Burden Statement

The annual public reporting and recordkeeping burden for this collection of information is estimated to average 1,707 hours per respondent, or 255 hours per application. Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

To comment on the Agency's need for this information, the accuracy of the provided burden estimates, and any

suggested methods for minimizing respondent burden, including the use of automated collection techniques, EPA has established a public docket for this ICR under Docket ID Number EPA-HQ-OAR-2010-1062, which is available for online viewing at www.regulations.gov, or in person viewing at the Air and Radiation Docket and Information Center in the EPA Docket Center (EPA/DC), EPA West, Room 3334, 1301 Constitution Avenue, NW, Washington, D.C. The EPA Docket Center Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding legal holidays. The telephone number for the Reading Room is (202) 566-1744, and the telephone number for the Air and Radiation Docket and Information Center is (202) 566-1742. An electronic version of the public docket is available at www.regulations.gov. This site can be used to submit or view public comments, access the index listing of the contents of the public docket, and to access those documents in the public docket that are available electronically. When in the system, select "search," then key in the Docket ID Number identified above. Also, you can send comments to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street, NW, Washington, D.C. 20503, Attention: Desk Officer for EPA. Please include the EPA Docket ID Number EPA-HQ-OAR-2010-1062 and OMB Control Number 2060-NEW in any correspondence.

Table 6-4
Annual Respondent Burden and Cost, 2014 (Year 1)
Heavy-Duty Pickup Trucks and Vans Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles

Information Collection Activity	Hours and cost per application									Total hours and cost		
	Engineer @82.24 / hr	Manager @ \$106.50 /hr	Legal @ \$138.20 /hr	Test Cell Operator @ \$48.40 /hr	Clerical @ \$31.39/ hr	Respon. hr/yr	Labor Cost/yr	Capital Startup Cost	*Applications / respondent	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	10	4	3	4	0	21	1,857	0	8.0	3	504	44,558
Test/Gather emission data on test vehicles (dyno)	12	4	0	8	0	24	1,800	0	30.0	3	2,160	162,007
Test Cost (Coast Down)	10	2	0	2	0	14	1,132	0	30.0	3	1,260	101,898
Analyze data to determine compliance	16	4	2	2	0	24	2,115	0	8.0	3	576	50,761
Information Technology Upgrade								25,000		3		75,000
Prepare and submit certification application	16	24	6	4	16	66	5,397		8.0	3	1,584	129,525
Collect and Submit Data for ADFE model	65	15	0	10	2	92	7,490	0	8.0	3	2,208	179,757
Prepare & Review GHG Compliance Plan	9	8	1	0	1	19	1,762	0	8.0	3	456	42,282
End-of-Year/ Final Production Reports	20	10	8	0	8	46	4,067	0	8.0	3	1,104	97,596
Total per respondent	1,748	700	160	460	216	3,284	269,462	25,000	8	3	3,284	\$294,462
Total for the industry	5,244	2,100	480	1,380	648	9,852	808,385	75,000	24	3	9,852	\$883,385

*Three manufacturers are expected to submit 8 certification applications each (4 HD truck families and 4 HD van families) and conduct coastdown and dyno testing on 30 vehicles among their different models

Table 6-5
Annual Respondent Burden and Cost, 2015-2016 (Years 2 & 3)
Heavy-Duty Pickup Trucks and Vans
Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles

Information Collection Activity	Hours and cost per application								Total hours and cost		
	Engineer @82.24/hr	Manager @ \$106.50/hr	Legal @ \$138.20/hr	Test Cell Operator @ \$48.40/hr	Clerical @ \$31.39/hr	Respon. hr/yr	Labor Cost/yr	*Applications / respondent	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	2	1	0	1	0	4	319	8.0	3	96	7,665
Test/Gather emission data on test vehicles (dyno)	12	4	0	8	0	24	1,800	7.0	3	504	37,802
Test Cost (Coast Down)	10	2	0	2	0	14	1,132	7.0	3	294	23,776
Analyze data to determine compliance	16	4	2	2	0	24	2,115	8.0	3	576	50,761
Prepare and submit "carryover" application	8	12	3	4	10	37	2,858	8.0	3	888	68,592
Prepare and submit certification applications	2	1	1	2	2	7	446	8.0	3	168	10,714
Prepare & Review GHG Compliance Plan	9	8	1	0	1	19	1,762	8.0	3	456	42,282
End-of-Year/ Final Production Reports	20	10	8	0	8	46	4,067	8.0	3	1,104	97,596
Total per respondent	610	326	116	142	168	1,362	113,063	8	3	1,362	
Total for the industry	1,830	978	348	426	504	4,086	339,189	24	3	4,086	\$339,189

In years 2 and 3 of program implementation, manufacturers will only be required to run coastdown and dyno tests on newly introduced vehicles

Table 6-6
Annual Respondent Burden and Cost, 2014 (YEAR 1)
Medium- and Heavy-Duty Engine Manufacturers

Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines & Vehicles

Information Collection Activity	Hours and cost per application										Total hours and cost		
	Engineer @82.24/hr	Manager @ \$106.50/hr	Legal @ \$138.20/hr	Test Cell Operator @\$48.40/hr	Clerical @ \$31.39/hr	Respon. hr/yr	Labor Cost/yr	Capital Startup Cost	O & M Cost	*Applications / respondent	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	4	1	0	0	0	5	435	0	0	9.0	12	540	47,030
Testing/ Gathering emission data on test vehicles	1	0	0	2	0	3	179	0	0	9.0	12	324	19,336
N2O Analyzer Investment	0	0	0	0	0	0	0	31,500	0	2.0	12	0	756,000
Analyze data to determine compliance	1	1	0	0	0	2	189	0	0	9.0	12	216	20,384
Prepare and submit certification application	1	1	1	1	1	5	383	0	0	9.0	12	486	41,313
Preparing and submitting "carry over" applications	1	1	0	0	0	2	189	0	0	9.0	12	216	20,384
Prepare & Review GHG Compliance Plan	2	2	0	0	0	4	377	0	0	9.0	12	432	40,768
Final Year Production Update	4	1	0	0	0	5	435	0	0	9.0	12	540	47,030
Store, file and maintain records	0	0	0	0	2	2	63	0	0	9.0	12	216	6,780
Total per respondent	126	63	9	23	27	248	\$20,252.07	31,500	0	9	12	248	\$0
Total for the industry	1,512	756	108	270	324	2,970	\$243,025	756,000	\$0	108	12	2,970	\$999,025

*Twelve manufacturers are expected to submit 9 certification applications

Table 6-7
Annual Respondent Burden and Cost, 2015-2016 (YEARS 2&3)
Medium- and Heavy-Duty Engine Manufacturers

Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines & Vehicles

Information Collection Activity	Hours and cost per application										Total hours and cost		
	Engineer @82.24/hr	Manager @ \$106.50/hr	Legal @ \$138.20/hr	Test Cell Operator @ \$48.40/hr	Clerical@ \$31.39/hr	Response hr/yr	Labor Cost/yr	Capital Startup Cost	O & M Cost(1)	Applications/respondent (2)	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	2	1	0	0	0	3	271	0	0	9.0	12	324	29,266
Testing/ Gathering emission data on test engines	1	0	0	2	0	3	179	0	0	9.0	12	324	19,336
Analyze data to determine compliance	1	1	0	0	0	2	189	0	0	9.0	12	216	20,384
Prepare and submit certification application	1	1	1	1	1	5	383	0	0	9.0	12	486	41,313
Preparing and submitting "carry over" applications	1	1	0	0	0	2	189	0	0	9.0	12	216	20,384
Prepare & Review GHG Compliance Plan	1	1	0	0	0	2	189	0	0	9.0	12	216	20,384
Final Year Production Update	4	1	0	0	0	5	435	0	0	9.0	12	540	47,030
Store, file and maintain records	0	0	0	0	2	2	63	0	0	9.0	12	216	6,780
Total per respondent	99	54	9	23	27	212	\$17,073.09	0	0	9	12	212	17,073
Total for the industry	1,188	648	108	270	324	2,538	\$204,877	0	\$0	108	12	2,538	\$204,877

Table 6-8
Annual Respondent Burden and Cost, 2014 (YEAR 1)
Class 3-8 Vocational Vehicles
Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines & Vehicles

Information Collection Activity	Hours and cost per application									Total hours and cost		
	Engineer @82.24 /hr	Manager @ \$106.50/hr	Legal @ \$138.20/hr	Clerical@ \$31.39/hr	Response hr/yr	Labor Cost/yr	Capital Startup Cost	**O & M Cost	*Applications/ respondent	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	20	6	2	0	28	2,560	0	0	4.0	15	1,680	153,612
Tire Testing (ISO28580)	2	1			3	271		12,000	40.0	15	1,800	342,588
Collect, Input GEM Data & Run Model	20	4	0	0	24	2,071	0	0	4.0	15	1,440	124,248
Analyze data to determine compliance	10	4	1	0	15	1,387	0	0	4.0	15	900	83,196
Prepare and submit certification application	16	2	2	4	24	1,931	25,000	0	4.0	15	1,440	490,848
Labeling Requirements	8	3	2	4	17	1,379	25,000	0	4.0	15	1,020	457,763
Final Year Production Update	40	4	0	8	52	3,504	0	0	4.0	15	3,120	210,233
Store, file, maintain records	10	4	0	4	18	1,374	0	0	4.0	15	1,080	82,438
Total per respondent	576	148	28	80	832	\$67,661.68	50,000	12,000	4	15	832	\$129,662
Total for the industry	8,640	2,220	420	1,200	12,480	\$1,014,925	750,000	\$180,000	60	15	12,480	\$1,944,925

*Based on 15 manufacturers, each submitting an average 4 applications for certificates of conformity to cover production of their Class 3, 4, 5, 6, 7 and 8 vocational trucks

** The O&M cost reflects each manufacturer testing 10 tires per application at a cost of \$300 per tire (\$300 * 4 applications * 10 tires= \$12,000) for a total of 600 tires for the industry.

Table 6-9
Annual Respondent Burden and Cost, 2015-2016 (YEARS 2&3)
Class 3-8 Vocational Vehicles
Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines & Vehicles

Information Collection Activity	Hours and cost per application								Total hours and cost		
	Engineer @82.24/hr	Manager @ \$106.50/hr	Legal @ \$138.20/hr	Clerical @ \$31.39/hr	Respon. hr/yr	Labor Cost/yr	O & M Cost	*Applications/respondent	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	8	3	1	0	12	1,116	0	4.0	15	720	66,937
Tire Testing (ISO28580)	2	1			3	271	300	4.0	15	180	34,259
Collect, Input GEM Data & Run Model	20	4	0	0	24	2,071	0	4.0	15	1,440	124,248
Analyze data to determine compliance	10	4	1	0	15	1,387	0	4.0	15	900	83,196
Prepare and submit "carryover" application	16	2	2	4	24	1,931	0	4.0	15	1,440	115,848
Labeling Requirements	8	3	2	4	17	1,379	0	4.0	15	1,020	82,763
Final Year Production Update	40	4	0	8	52	3,967	0	4.0	15	3,120	238,001
Store, file, maintain records	10	4	0	4	18	1,374	0	4.0	15	1,080	82,438
Total per respondent	456	100	24	80	660	53,979	\$ 1,200.00	4	15	660	55,179
Total for the industry	6,840	1,500	360	1,200	9,900	\$809,689	\$18,000	60	15	9,900	\$827,689

*Based on 15 manufacturers, each submitting an average 4 applications for certificates of conformity to cover production of their Class 3, 4, 5, 6, 7 and 8 vocational trucks

** The O&M cost reflects that each manufacturer will be able to carry-over tire test results and estimates that each will test 1 new tire per certification at a cost of \$300 per tire, for a total of 60 new tires each year for the industry.

Table 6-10
Annual Respondent Burden and Cost, 2014 (YEAR 1)
Class 7-8 Combination Tractors

Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles

Information Collection Activity	Hours and cost per application									Total hours and cost		
	Engineer @70.67/hr	Manager @ \$106.49/hr	Legal @ \$138.2/hr	Clerical@ \$31.39/hr	Respon. hr/yr	Labor Cost/yr	Capital Startup Cost (1)	O & M Cost (2)	Applications/respondent (3)	Number of Respon.	Total hr/yr	Total Cost/yr
Review of regs and guidance document	10	10	5	0	25	2,463	0	0	9.0	4	900	88,654
Test tractors for Cd (coefficient of drag)												
- Coast Down Testing	12	3			15	1,168	0	15,000	1.0	4	60	64,670
- Wind Tunnel Testing	8	2			10	778	0	20,000	10.0	4	400	831,134
- Cfd (initial drawing)	8	4			12	991	0	5,000	10.0	4	480	239,653
- Cfd (layers)	2	1			3	195	0	500	81.0	4	810	225,046
Tire Testing												0
- ISO 28580	6	2			8	637	0	300	90.0	4	2,880	337,320
Collect Data & Run GEM	51	10		8	69	4,920			9.0	4	2,484	177,127
Labeling Requirements	40	8	6	500	554	20,203	100,000	0	1.0	4	2,444	480,812
Prepare & submit certification application	40	20	10		70	6,339	150,000	0	1.0	4	2,520	625,354
End-of-year Production Report	225	45	20	10	300	23,771	0	0	9.0	4	10,800	855,745
ABT, Emissions Credit Report	100	15	8	6	129	9,958	0	0	9.0	4	4,644	358,498
Store, file, maintain records	80	20	10	40	150	10,421	0	0	9.0	4	5,400	375,156
Total per respondent	5,788	796	531	1,076	8,191	\$ 81,843.06	\$250,000	\$40,800	9	4	8,191	
Total for the industry	23,152	3,182	2,124	4,304	32,762	2,329,168	1,000,000	1,330,000	36	4	32,762	\$4,659,168

(1) Capital start up costs include upgrades in information and management system to record and report test data to EPA

(2) Operations & Maintenance Costs include contract costs for running coast down and wind tunnel tests

(3) Four manufacturers will submit 9 applications for certification; conduct 1 coast down test; 10 wind tunnel tests; 10 initial Cfd drawings; 81 Cfd layers. Each manufacturer will test 10 tires per application for a total of 360 tires tested for the industry.

Table 6-11
Annual Respondent Burden and Cost, 2015-2016 (YEAR 2&3)
Class 7-8 Combination Tractors
Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles

Information Collection Activity	Hours and cost per application							Total hours and cost			
	Engineer @70.67/hr	Manager @ \$106.49/hr	Legal @ \$138.20/hr	Clerical@ \$31.39/hr	Response hr/yr	Labor Cost/yr	*O & M Cost	Applications/ respondent	Number of Respon	Total hr/yr	Total Cost/yr
Review of regs and guidance document	6	4	2	0	12	1,126	0	8.0	4	384	36,044
Test tractors for Cd (coefficient of drag)											
- Coast Down Testing	0	0	0	0	0	0	15,000	0.0	4	0	0
- Wind Tunnel Testing	8	2			10	778	20,000	1.0	4	40	83,113
- Cfd (initial drawing)	8	4			12	991	5,000	1.0	4	48	23,965
- Cfd (layers)	2	1			3	195	500	9.0	4	90	25,005
Tire Testing										0	0
- ISO 28580	6	2			8	637	300	5.0	4	160	18,740
Collect Data & Run GEM	51	10		8	69	4,920		8.0	4	2,208	157,446
Labeling Requirements	10	4	3	80	97	4,058	0	8.0	4	3,104	129,871
Prepare & submit certification application, including carryover apps	40	20	10		70	6,339	0	8.0	4	2,240	202,835
End-of-year Production Report	80	5	2	10	97	6,776	0	8.0	4	3,104	216,843
ABT, Emissions Credit Report	60	15	4	6	85	6,579	0	8.0	4	2,720	210,518
Store, file, maintain records	20	10	2	40	72	4,010	0	8.0	4	2,304	128,330
Total per respondent	2,200	565	184	1,152	4,101	\$ 36,410.22		8	4		
Total for the industry	8,800	2,258	736	4,608	16,402	\$1,108,711	\$124,000	32	4	16,402	\$1,232,711

* Operations & Maintenance Costs include contract costs for running coast down and wind tunnel tests. The O&M cost reflects that each manufacturer will be able to carry-over tire test results and estimates that each will test 1 new tire per application at a cost of \$300 per tire, for a total of 32 new tires each year for the industry.