Questions and Answers

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

Implementation Workshop
Third Edition

The Environmental Protection Agency (EPA) along with the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) organized and sponsored an implementation workshop in Ann Arbor, MI on November 3, 2011. The objective of this workshop was to provide guidance to heavy-duty (HD) engine and vehicle manufacturers who wish to exercise the option for early compliance under new greenhouse gas (GHG) and fuel consumption (FC) regulations (see 76 FR 57106) for model year 2013 products. By so doing, manufacturers are able to secure early credits which will enable a more efficient phase-in of compliant products and, by so doing, will provide cleaner and more fuel efficient technologies to the marketplace sooner.

The HD GHG and FC Implementation Workshop included a number of presentations describing the processes manufacturers would need to follow to certify vehicles and technologies, test certified products, exercise available compliance flexibilities and report information to the agencies. During the course of the workshop, questions were submitted to the EPA/NHTSA panel on note cards from the audience. Agency representatives answered a number of technical questions during the workshop.

This document contains a record of the answers EPA has completed to date to the questions submitted by industry before, during and after the November 3, 2011 work-

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shop. This 2nd Edition includes most of the remaining Aerodynamic drag questions submitted by the industry. Note that some questions have been re-ordered to group questions on similar topics together as much as possible. The agencies intend to update this document on a regular basis as the answers to additional questions are developed and as new questions that continue to come in over time are received and answered. Finally, wherever possible, when many questions are received that warrant the same answer, we have listed all these questions together under one question number in order to answer them once.

This document was prepared by EPA's Office of Transportation and Air Quality (OTAQ) with input from NHTSA. Regulated parties may use this document to aid in achieving compliance with the regulations for heavy-duty vehicles (40 CFR Part 86, 1037; and, 49 CFR Part 523,534 and 535) and heavy-duty engines (40 CFR Part 1036; and, 49 CFR Part 523, 534 and 535). However, this document does not in any way alter the requirements in EPA's or NHTSA's regulations. Although the answers provided in this document interpret the regulations and indicate general plans for implementation of the regulations at this time, some of the responses may change as additional information becomes available, or as the agencies further consider certain issues. The questions and answers contained in this document do not establish or change the legal rights or obligations of manufacturers in complying with EPA and NHTSA regulations. Further, this document does not establish binding rules or requirements and is not fully determinative of the issues addressed. Moreover, Agency decisions in any particular case will be made applying the law and regulations on the basis of specific facts.

GENERAL:

What is the anticipated timeline to get early certification?

Manufacturers should begin now collecting data and information required to submit a complete application for certification, carry out pre-certification meetings with the agencies and begin the application process. If manufacturers have prepared complete applications, EPA and NHTSA will be ready to conduct application reviews and possibly issue certificates by the first quarter of calendar year 2012.

When will the Designated Compliance Officer (DCO) be named?

Per 1037.801, the DCO is defined as the manager of the Heavy-Duty and Nonroad Engine Group. Due to a recent reorganization of EPA's Office of Transportation and Air Quality, the name of the Heavy-Duty and Nonroad Engine Group has been changed to the Diesel Engine Compliance Center. The manager of the Diesel Engine Compliance Center is the DCO. The current DCO, Justin Greuel, can be reached at 202-343-9626. Each engine/truck manufacturer is assigned an EPA certification representative in the Diesel Engine Compliance Center who should be your first line of contact with EPA.

For 2b/3 Pick Ups and Vans, the certification representative is the same assigned for your LDV/LDT/MDPVs.

For HD Engines, the certification representative is the same assigned for your criteria pollution engine certification.

For Combination Tractors and Vocational Vehicles, your assigned certification representative is as follows:

Greg Orehowsky – Team leader and Certification Representative
Orehowsky.gregory@epa.gov – (202) 343-9292
Navistar/International, Fiat Powertrain, Mitsubishi Fuso
Manufacturers new to certification should contact Greg for assignment of a certification representative.

Jason Gumbs – Certification representative
Gumbs.jason@epa.gov – (202) 343-9271
Detroit Diesel/Daimler Trucks, Volvo (P/T & trucks)

Jay Smith – Certification representative
Smith.jay@epa.gov – (734) 214-4302
PACCAR, Ford, GM, Cummins, Isuzu

Who will review and approve each portion of the certification data, both in the pre-certification meeting and in the application?

The review process for pre-certification and certification application review will be handled by various agency staff with your assigned certification representative as the focal point. Technical experts within EPA and NHTSA will be used for various aspects of the review process as needed (e.g., aerodynamics and tire consultation).

When will EPA be ready to provide certification templates?

Templates have been reviewed at the Certification Workshop. These templates will be posted to epa.gov/otaq/certdat2.htm as soon as the HD GHG Information Collection Request is approved by the Office of Management and Budget.

When will EPA be ready to receive certification documents from OEMs?

Certification documents using the new templates can be submitted at any time after templates are posted. Posting will occur as soon as the HD GHG Regulation Information Collection Request is approved by the Office of Management and Budget.

Will there be fees? What will the GHG certification fees be for engines and vehicles and hybrids?

The Heavy Duty Greenhouse Gas Rule does not establish new fees. Thus, OEMs of HD engines and pickup trucks/vans will continue to pay a fee for criteria pollutant certification, but at this time there are no new fees associated with certification to heavy duty greenhouse gas standards. A consequence is that OEMs of vehicles not subject to criteria pollutant certification requirements (i.e., vocational chassis, combination tractors, and Class 4 & 5 certifying as HD Pickups/Vans) do not pay certification fees.

What system, if any, will be used for submission of early certification and future certification applications and supporting data?

The early credit certification will be done using FileMaker Pro for engines. Minor revisions to the engine FileMaker Pro templates will accommodate engine GHG certification data. New Excel-based templates for HD Pickups/Vans, Combination Tractors and Vocational Vehicles have been created. Certification information for all sectors will be submitted using the Central Data Exchange (CDX) system.

Will EPA provide templates for certification documentation and support data?

Yes. Certification application templates will be provided. However, be sure to discuss this with your Certification Representative as some support documentation may need to be provided to EPA through the CDX in .pdf or similar format.

What level of detail will EPA require for each aspect/topic that requires data?

The templates will define the information you need to provide to EPA and NHTSA to comply with regulations. To the extent that the templates are unclear to you, we encourage you to work with your Certification Representative. Manufacturers must also keep the necessary back-up data and information should EPA require additional information to confirm the submission.

FEL vs. FCL
The morning presentation stated that the FCL is used for certification and for credits, while the FEL is used for audit purposes and in use testing.

- 1037.615 (e) calculate CO^2 credits using FEL for electric vehicles.
- 1037.705 (b) calculate CO^2 credits using FEL
- 1036.801: says FCL is used for CO^2 and FEL is used for other emissions, except CO^2 and for CO^2 FEL=FCL*1.03

Please clarify?

The Family Certification Level (FCL) only applies for CO^2 for Engines as described in 40CFR1036.108 and 1036.801. Vehicle manufacturers should use the Family Emission Limit (FEL) as described in 1037.801.

Product/Planning: What timing requirements does the agency anticipate HD GHG certification reviews will require for (1) Engines, (2) Vehicles? Since 1997, Engine certification has gone from 2-3 pages and a few days to , today, several hundreds of pages (both emissions and OBD) with multiple agency review (EPA/CARB) taking several months to get approvals. How many pages (or reams) does the EPA anticipate a vehicle certification application will be? And how long for EPA to review them?

The manufacturer will need to fill out certification templates and provide the requested supporting documentation. Length of the application package will be dependent upon complexity of emission control strategies (e.g., AECDs) or alternative test procedures used by the manufacturer. For a complete application (assuming that all preliminary approval items have already been resolved), a manufacturer can typically plan for at least 30-45 days after submitting the application. Incomplete applications can delay the processing time further.

Model Year End Date: When do OEMs need to tell EPA of the actual end date of a model year versus the projected end date that is put on the certification worksheet?

For purposes of meeting reporting obligations, end of model year is considered December 31st. If a manufacturer ends their production period earlier then December 31st, they should include the information in their end of year production reports.

Does EPA have a guidance document site similar to the Applicability Determination Index for Stationary Source Regulations (NSR, PSD, MAIT, NSPS), but for Part 85, 86, 1036, 1037 (mobile source ADI site). If not are there plans to establish one?

www.epa.gov/otaq/cert/dearmfr/dearmfr.htm
www.epa.gov/otaq/certdat2.htm

HEAVY DUTY PICKUPS & VANS:

No specific questions concerning HD Pickups and Van have been completed to date. See general questions.

HEAVY DUTY ENGINES:

No specific questions concerning HD Engines have been completed to date. See general questions.

COMBINATION TRACTORS & VOCATIONAL VEHICLES:

What level of detail must be reported to EPA with respect to the OEM definition of Vocational Tractor?

In order for a vehicle to be reclassified as a vocational tractor, it must meet the definition in 40CFR1037.630(a) and 49CFR523.2, meet the requirements in 40CFR1037.630(b) and 49CFR535.5(c)(5), and include the language required to be added to the vehicle's emission control information label specified in 1037.630(c). In addition, there are production limits for vocational tractors. No manufacturers may produce more than 21,000 vehicles under 1037.630(c) in any three consecutive model years. No pre-approval is normally required for on-road vocational tractors. A manufacturer is only required under 1037.630(b) to include in its application for certification a brief description of its basis for reclassifying certain of its tractors as vocational, citing the applicable vehicle and application types enumerated in 1037.630(a)(1). As specified in 1037.630(c), the manufacturer must keep records for three years to document its basis for believing the vehicles will be used as described in 1037.630(a). In the future, if EPA determines that a manufacturer is not applying the allowance in good faith, it may require the manufacturer obtain preliminary approval before using the allowance.

What level of detail must be reported to EPA with respect to the OEM definition of Off Road Vehicle?

There is no requirement that OEMs obtain approval of off-road status (and consequent exemption from the vocational vehicle GHG standards). Criteria for meeting this exemption are found at 40 CFR 1037.631(a) and 49 CFR 523.2, but the manufacturer must report the basis of its determination by the end of year, as outlined in 40 CFR 1037.631(c) and 49 CFR 535.8(h)(6). However, if the vehicles do not meet the criteria of the definition in the regulation, then the manufacturer may ask for an exemption according to 40 CFR 1037.150(h) and 49 CFR 535.8(h)(6)(ii). EPA will coordinate approval decisions with NHTSA.

We are a corporation made up of several business units or divisions that all produce vocational vehicles. We have at least two divisions that are final stage manufacturers who produce their own chassis. Will we be asking for one manufacturer number for the corporation, or does each division get their own number?

It is normal practice among corporations to use one manufacturer code for all vehicle and engine products regulated by EPA. Therefore, you should use one manufacturer code to encompass all your products regulated by EPA. However, let your certification representative know if you think this approach would be problematic for you.

Likewise, will we average compliance across the corporation for all vocational vehicles, or does the averaging take place only within a division?

The averaging should take place across the corporate product lines. You may average within the following three averaging sets:

- Light heavy duty vehicle line
- Medium heavy duty vehicle line
- Heavy heavy duty vehicle line

Will we get separate vehicle certificates and engine certificates?

For class 2b/3 complete vehicles you will receive a vehicle certificate based on complete vehicle testing. For 2b-8 incomplete vehicles you will receive a vehicle certificate based on chassis modeling. For class 7-8s tractors/vocational vehicles you will receive a vehicle certificate based on chassis modeling. For engines in vehicles not included in the 2b/3 complete vehicle program, which are subject to the engine provisions, you will receive an engine certificate based on engine testing. If you are the manufacturer of both the engine and the chassis, and intend to certify as a vocational vehicle, you will receive an engine certificate based on engine testing and a vehicle certificate based on chassis modeling.

What data is needed to approve early families? Vehicle Cert Label, GEM confirmation, etc …? What data to support GEM Outputs must be submitted? How much back-up data is required to confirm GEM output?

Before submitting applications for certificate; it is recommended that each manufacturer directly contact its certification representative to discuss those issues for which it needs EPA approval. Note that while §1037.30 directs manufacturers to submit all reports and requests for approval to EPA's designated compliance officer (DCO), the DCO has instructed that each manufacturer go directly to its EPA certification representative to arrange to submit and discuss all information required to facilitate the agency's approval process. It is highly recommended that this be done early to give sufficient time for granting approvals and to avoid wasted application work and testing.

Section 1037.205 and the certification application template provided by EPA will identify all information and data the manufacturer must submit at the time of application. §1037.150 and §535.5(b)(2) and (c)(2) provide guidance specifically for approving early families. The manufacturer is responsible to review the reporting requirements and recordkeeping requirements in the regulations (including 40CFR1037.250, 730, 735 and 825; and 49CFR535.8) to assure it has submitted all required information not identified by the template. Typically these additional documents are submitted in .pdf or other secure format. The manufacturer is also required to keep any backup data and information necessary to support the data and information submitted during application submission.

Aerodynamic drag data – all evaluations cannot be completed in time for cert application submission or new variants or models are anticipated or in process but we cannot generate final aero assessment. As a result, will EPA allow placeholder information for Aerodynamic drag data during the certification process if it is updated during the course of the model year? The new data would be used for year-end and final compliance reporting. If so, what process will be used? Does all info need to be in before Certificate is issued? Can there be gaps in Aerodynamics data? Is there an opportunity to update information? Do we need to supply the CdA test on our GEM input file if we already supply the Bin? (bins are easy to calculate for every vehicle, but CdA's are difficult)

Manufacturers have expressed concern that the time needed to secure approval for alternative aerodynamic demonstration methods and generate the needed data will cause delay in certification of vehicle families before the 2014 model year. While application data using manufacturer selected FELs and projected production figures can be used by the agencies as an indicator of what to expect, no final compliance determination or final credit determination can be established until the end of the model year and would have to be based on actual vehicle configurations and production data.

Therefore, for manufacturers wishing to certify vehicle families for the 2013 model year, where a manufacturer can use existing aerodynamic data and good engineering judgment to establish reasonable bin assignments for all of its vehicle families, but has insufficient time to generate the necessary data through coastdown and alternate methods before the model year production begins, EPA can apply §1037.521 which allows manufacturers to determine drag area using an alternate method, and §1066.10(c) which states, "…We [EPA] may allow or require you to use procedures other than those specified in this part for laboratory testing, field testing, or both, as described in 40 CFR 1065.10(c)…. If we require you to request approval to use other procedures under this paragraph (c), you may not use them until we approve your request."

EPA has determined that, for vehicle families that a manufacturer chooses to certify for the 2013 model year, should a manufacturer require additional time to generate all the required data, we will allow the manufacturer to submit, as part of its application, any data and/or information that they have and their rationale showing that good engineering judgment assures their vehicle configuration assignments to Aerodynamic Bins for all their GEM model runs are accurate. If EPA agrees with the manufacturer's assessment as submitted, we can approve the certification application.

Therefore, for 2013 model year vehicle families, manufacturers will not be required to generate all data before receiving their certificate. However, manufacturers using this approach will be required to carry out the requisite testing during the model year, such that all required data is reported to EPA in the end-of-year report, at which time any early credits earned will be allocated. Since no credit deficits can be generated in model year 2013, there is no risk to the environment should testing not be completed; credits would simply not be earned by the manufacturer. While §1066.10(c) states that we may allow you to continue to use this process beyond the 2013 model year, it is our expectation that this will be unnecessary in model year 2014 and beyond because, as just explained, manufacturers will have established test programs that allow them to generate the required data. The agencies expect manufacturers to have sufficient aerodynamic data to perform and submit the GEM inputs and outputs at the time of application for certificates for model year 2014 and beyond.

For the 2014 model year and beyond, there are minimum test data requirements to run the GEM model, using the direction in §1037.520 and §1037.521. Per §1037.205(o), at the time the manufacturer applies for certification, it is required to submit GEM assessments from 10 unique GEM configurations. It is required to include configurations with the best CO^2 emissions, worst CO^2 emissions, and 8 additional GEM runs that should include a configuration representing the highest projected sales volumes. The manufacturer must have sufficient aerodynamic data to support these GEM runs.

- If manufacturers must meet the 10 GEM run requirement using configurations that, based upon good engineering judgment, are substantially aerodynamically equivalent, they may base the Cd input for GEM on the same aerodynamic testing/assessment.
- If manufacturers prefer to use an alternative aerodynamics test method, they must test a vehicle over both the coastdown test method and the alternative test method preferred by the manufacturer (e.g., wind tunnel testing, computational fluid dynamic modeling or constant speed road load testing) to generate its correction factor. The manufacturer can then make alternative method assessments that have been corrected back to the coast-down «baseline» method using this correction factor in lieu of additional coastdown testing. §1037.521(c) states, "You must obtain preliminary approval before using any methods other than coastdown testing to determine drag coefficients. Send your request for approval to the Designated Compliance Officer [DCO]." Again, the DCO has instructed that you send your request for approval directly to your EPA certification representative.
- If manufacturers determine that a new sub-family is warranted during a model year, then they must file a running change including all relevant test data.

What is the approval process for a manufacturer to request an Alternative Aerodynamic Demonstration procedure?

A request to EPA to use an alternative aerodynamic method should include the following:

- You (the certificate requestor) should first contact your certification representative (as delegated by EPA's DCO) to state your intention to request use of an Alternative Aerodynamic Demonstration procedure. At this point, you should provide a technical description of your proposed alternate method and your plan for validating this method against coastdown testing.
- Per §1037.521, you must obtain preliminary approval before using any method other than coastdown testing, and describe how to adjust the drag area provided by the alternative test method to be equivalent to the corresponding drag area that would have been measured using the coastdown procedure. You must keep records of the information specified in §1037.521(c) and unless directed otherwise, include this information with your request for approval to the DCO. In this case, the DCO has instructed that you send your request for approval, to your assigned certification representative.
- Your certification representative will convene appropriate EPA staff to provide technical support in evaluation of the proposed alternative aerodynamic test method.

What level of detail will EPA require for vehicle height data and calculation for Regulatory Subcategory determination?

You must keep records of these and other relevant certification data and calculations per EPA Reporting and Recordkeeping requirements provided in 40CFR1037.825 as well as NHTSA Reporting Requirements provided in 49CFR535.8(h). However, with regards to what needs to be submitted in the certification application, it will be sufficient to identify your vehicle as either a high, low, or mid roof tractor. Manufacturers must determine the roof height of tractors in accordance with §1037.801.

For determining Low and Mid-roof aero relative to §1037.520 (b)(3), the bin for the low and mid-roof sleepers is assigned "based on the drag area bin of an equivalent high-roof tractor". The question is, does an "equivalent high-roof tractor" mean:

1. **Pick one model/high-roof sleeper configuration to represent the entire family (Model 386 with 70" sleeper is used for all other model and sleeper combinations), or**
2. **Pick one high-roof sleeper configuration to represent the entire model within the family (70" sleeper is used for all other sleeper lengths on the Model 386), or**
3. **Use the high-roof sleeper version of the low or mid-roof sleepers on each model for determining low and mid-roof aero bin (70" sleeper on Model 386 is used only for the 70" low and mid-roof sleepers on Model 386 tractors)?**

Use the high-roof sleeper version of the low or mid-roof sleepers on each model for determining low and mid-roof aero bin (70" sleeper on Model 386 is used only for the 70" low and mid-roof sleepers on Model 386 tractors).

Will EPA need to witness coastdown testing?

No. However, the manufacturer may want to submit its coastdown test plan to its certification representative prior to testing.

§1037.140 requires nominal design roof heights to be included on the door label. This section notes using the average of the smallest and largest tires offered for the model in the calculation. Is the same approach to be used for rear suspension heights, frame rail section/height, and cab mounting heights?

§1037.140 does not require any labeling for the exact roof heights and/or weights. §1037.135(c)(4) requires that the regulatory subcategory be included on the label (e.g., "Class 8 High Roof Sleeper Cab"). The manufacturer should consult the definition of "Roof Height" in §1037.801 for selection of the appropriate regulatory subcategory.

Refined definitions for Emission Control System description codes for door label for Aerodynamic Components:

- ATS: does an under cab fairing only qualify, or does it take a mid-chassis section also, or if it full fairings only (wheel-to-wheel)? How do full fairings on one side and partial fairings on the other fit in (leaving open space for an APU)?
- TGR: how long does the gap reducing fairing need to be to qualify or does it just need to exist per OEM definition?
- ARF: Does a full height sleeper roof require this code or is it just for add on fairings?

§1037.135(c)(6) requires that manufacturers include the label identifier abbreviation for all vehicle emission control components they use in or on their vehicles as specified in Appendix III to Part 1037—Emission Control Identifiers. Since the intent of these identifiers is to provide

inspectors with a means for simply verifying the presence of a component, we do not believe overly detailed identifiers are necessary, particularly for tires and aerodynamic components. We believe that identifying tires and aerodynamic components in a general sense will prove similarly effective in determining if a vehicle has been built as intended or if it has been modified prior to being offered for sale. Please contact your certification representative if you do not find a suitable label identifier for your chassis emission control system in Appendix III.

In the vocational Subcategory there are many small manufacturers for vehicles but only a few big tire manufacturers.

a) What is the tire manufacturer's responsibility to provide tire data to the vehicle manufacturers?
b) What is the procedure if the tire data is not available in a timely manner from the tire manufacturer?
c) What is EPA's plan to harmonize the data if the same tire shows different results?

a) The certificate holder (i.e., the vehicle manufacturer) is responsible for establishing agreements with tire manufacturers for the proper collection of tire data to provide to EPA. According to 1037.650, tire manufacturers providing such data to vehicle manufacturers are liable for the accuracy and representativeness of the test data.
b) If the tire manufacturer does not submit tire data to the vehicle manufacturer, the vehicle manufacturer should make alternate arrangements to develop or obtain tire data on their own and in accordance with 1037.520(c).
c) EPA has no plan to harmonize tire data, but the agency can conduct confirmatory testing (e.g., if we observe outlier data from the same tire model). 1037.520(c)(1) states that tire rolling resistance be measured, "… as specified in ISO 28580 (incorporated by reference in 1037.810), except as specified in this paragraph (c)." Use good engineering judgment to ensure that your test results are not biased low. You may ask us to identify a reference test laboratory to which you may correlate your test results." (See the next question and answer for further agency guidance with respect to tire test laboratories)

Are there Recognized test labs for Tire RR? Has the reference facility for determining tire rolling resistance per ISO28580 been determined?

At this time, EPA and NHTSA are unaware of any laboratories with a reference machine that has been certified specifically for use with the ISO 28580 test protocol. However, EPA and NHTSA have test results showing that two independent tire testing laboratories in the United States, Smithers-Rapra and Standards Testing Laboratory, have tire rolling resistance test machines that correlate well to each other. Both these independent laboratories have been used by the federal government and by industry to conduct tire testing for other federally-mandated programs. Therefore, until ISO certified tire machines are available, should a vehicle manufacturer request a test laboratory to which it may correlate its test results, EPA will accept tire data generated by or correlated to either of these two laboratories. In addition, should EPA decide to confirm or compliance test tires so certified, EPA will use one of these two laboratories for the testing.

What plans are there for compliance auditing by EPA and/or NHTSA on vehicle certifications and component inputs into the GEM?

- **E.g. Tire rolling resistance production variation and/or changes versus certified value?**
- **What are the liabilities for non-compliances and penalties, i.e. assessments from both EPA and NHTSA separately?**

The agencies may validate any component inputs, as necessary, through compliance testing. For tires, if the manufacturer chose to do correlation testing with either of the labs identified by the agencies in the previous question, we may check whether the tests CRR data show that, per §1037.520(c)(1), the manufacturer's results were not biased low. EPA or NHTSA may perform a paperwork audit, checking for the existence of lab tire test reports. However, if one truck OEM reports CRR values for a tire model that are significantly different from the values for the same model submitted by other truck OEMs, then EPA may consider a test program to verify the CRR value for that particular tire.

Both agencies have compliance review and enforcement responsibilities for their respective regulatory requirements. See Section V.G. of the final rule (76 FR 57290) for a description of the penalty programs associated with non-compliance with each agency's requirements.

Tire Rolling Resistance data (CRR) – Suppliers cannot complete testing in time for cert application submittal so will use existing test data or interpolated data. Will EPA allow placeholder information for Tire Rolling Resistance data during the certification process if it is updated during the course of the model year? The new data would be used for year-end and final compliance reporting. If so, what process will be used? Does all info need to be in before a Certificate is issued? Can there be gaps in Tire Rolling Resistance data? Is there an opportunity to update information?

There are minimum test data requirements per §1037.520(c) that must be in before a Certificate will be issued. Per §1037.520(c)(1), measure tire rolling resistance (RR) as specified in ISO28580 (incorporated by reference in §1037.810), and use good engineering judgment to ensure that your test results are not biased low. Per §1037.520(c)(2), for each tire design tested, measure RR of at least three different tires of that specific design and size, performing the test at least once for each tire. Sufficient tire RR data/assessments must be available at the time of certification to conduct the 10 GEM runs. If during the year, the OEM wants to offer a tire model that causes the GEM result of the vehicle configuration to go outside of the declared range of subfamily FELs, then they must do a running change. Finally, the OEM must have all of the tire RR information available and input into the appropriate GEM runs for each configuration for the End of Year (EOY) report. The manufacturers must test at least one tire size for each tire model, and may apply engineering analysis assessments for other tire sizes within the same model.

Note also, that §1037.520(c)(3) states that, «If the [vehicle manufacturer] obtains [its] test results from the tire manufacturer or from another third party, [it] must obtain a signed statement from them verifying that the tests were conducted according to the requirements of this part. Such statements are deemed to be submissions to EPA.

For certain vocational vehicles, they are sold today with tires specified by the customer, by brand, size, and tread pattern. This means that a particular model truck could be sold with any of over 100 combinations of front and rear CRR values. How will we handle this? Is each combination considered a subcategory since each would have a unique FEL value?

Having hundreds of combinations of tires does not mean they each will have unique FELs. For example, a vocational chassis manufacturer should model vehicle configurations with highest and lowest rolling resistance combinations. The spread between these two values will determine the number of subfamilies (and thus FELs) within the family. Manufacturers will then group tires/tire combinations into configurations that meet each FEL.

What level of detail will EPA require for the: (a) Range of tires offered for a given model, and (b) Tire testing and data?

You are required to have sufficient tire CRR data to conduct the 10 GEM runs at the time of certification. If during the year, the truck OEM wants to offer a tire model that causes the GEM result of the tractor configuration to go outside of the declared range of subfamily FELs, then they must do a running change. Otherwise, the OEM must have all of the tire RR information available and input into the appropriate GEM runs for each configuration for the EOY report.

I noticed a requirement for 24,000 miles/2 year warranty on tires? Certain vocational vehicle applications will wear out tires sooner. Large fire apparatus and urban use will wear out tires in 8000 miles. Garbage truck won't make 24,000 miles. How will EPA address this?

The tire must be free from defects during the warranty period, but the regulation does not place a requirement on wear. §1037.120 details the emission-related warranty requirements. The warranty period requires that "(1) It is designed, built, and equipped so it conforms at the time of sale to the ultimate purchaser with the requirements of this part. (2) It is free from defects in materials and workmanship that cause the vehicle to fail to conform to the requirements of this part during the applicable warranty period." Finally, as we have stated in the final rule preamble (76 FR 57278), "As proposed, tires are only required to be warranted for the first life of the tires (vehicle manufacturers are not expected to cover replacement tires)."

For vocational vehicles, what warranty are you looking for? Since tires are the only variable and they are a consumable item the vehicle warranty will not be applicable to meeting emissions.

In the event the tires are the only emission control component on the vehicle (as in some vocational vehicles), the tire warranty (§1037.120) is all that is required to satisfy this requirement. See also the answer to the preceding question.

What are the criteria for EPA/NHTSA to approve the vehicle manufacturers' tire information to the owners/users/fleets for replacement of low RR tires?

- **Question goes to replacement within the tire's emissions warranty period of 2 years or 24,000 miles, and replacement after this time.**
- **Question goes to the form of the information that is provided to the owners/users/fleets for post emissions warranty useful life for tire replacements, i.e. at this point, any replacement tire can be used regardless of the tire CRR properties.**
- **What are the tire-related rules concerning the OEM-certification with LRR tires and the possible changing &/or replacing of tires by the owners/users/fleets after delivery?**
- **What support and/or recommendations might be requested from the tire industry, e.g. models of tire CRR information from other countries, use of SmartWay verified LRR tires, etc.?**

Per §1037.125(i) the vehicle manufacturer is required to supply instructions that will enable the owner to replace tires so that the vehicle conforms to the original certified configuration. This can be a list of suggested tire models that have rolling resistances similar to the OE tire (i.e. SmartWay verified tires, etc). This can also be an explanation of what rolling resistances the replacement tires should have and how the owner can determine the rolling resistance value for replacement tires (i.e. tire manufacturer websites, literature, etc). Per §1037.125(h), we expect this information to either be contained in the owner's manual or a supplemental document to the owner's manual.

Are the provisions from the EPA regarding "tampering" of emissions system applicable, especially within useful life/emissions warranty for tires (2 years or 24,000 miles)?

- **What are the worn tire aspects and concerns for needed removals?**
- **What are the provisions available for the use of new vehicles for field evaluation tire placements, e.g. as it is being done today?**

Per §1037.125(i) the vehicle manufacturer is required to supply instructions that will enable the owner to replace tires so that the vehicle conforms to the original certified configuration. This can be a list of suggested tire models that have rolling resistances similar to the OE tire (i.e. SmartWay verified tires, etc). This can also be an explanation of what rolling resistances the replacement tires should have and how the owner can determine the rolling resistance value for replacement tires (i.e. tire manufacturer websites, literature, etc). We expect this information to either be contained in the owner's manual or a supplemental document to the owner's manual. See also the answer to the previous question.

What are the criteria for the inclusion of the tires as part of the emissions label on the vehicle?

If you use tires that meet the definition of "low rolling resistance" in §1037.801 then you need to indicate this by printing the appropriate abbreviation (see Appendix III to Part 1037) on the ECI label.