

Introduction

Overview of Confirmatory Testing



DISCLAIMER: This tutorial is intended as an overview of EPA compliance and test procedures located in the Code of Federal Regulations (CFR). While this overview is meant to reflect current EPA regulations and policy it is not intended to be a substitute or replacement for the CFR or rules published in the Federal Register. Any representation made in this tutorial counter to the language or intent of the regulations shall be void. Legal statutory and regulatory authority rests in the regulations contained in the CFR. The information in this tutorial is not exclusive of all the requirements under the regulations. Please see the appropriate regulatory sections in the CFR for more detailed and specific instructions relating to your regulatory requirements.

This Environmental Protection Agency (or EPA) tutorial provides an overview of the confirmatory testing process for engines and vehicles. EPA conducts confirmatory testing to confirm that engines or vehicles are compliant with EPA's emission standards.

Please use the buttons on your screen to play, pause, or stop the tutorial or access closed captioning. Note that all links referenced in the tutorial are listed at the end of the presentation. You will be able to click these links and open them in a new window where you can bookmark any of the links.

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Topics Covered

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- Background information
- Manufacturer requirements
- Getting set up in CDX
- EPA confirmatory test order package
- Confirmatory testing process
- Summary
- Helpful resources

This tutorial provides background information on the confirmatory testing and certification process, an overview of the processes manufacturers must follow to register with EPA and submit information to the Agency, the steps to get set up in the Central Data Exchange (or CDX), through which manufacturers are able to submit data files and other information electronically, a review of the contents of an EPA confirmatory test order package, an overview of the basic steps involved in confirmatory testing, and links to regulations and other more detailed information resources. The information presented in this tutorial is generally applicable to the spark-ignition (or SI) and compression-ignition (or CI) industry sectors. For additional information related to confirmatory testing please refer to the Helpful Resources section of this tutorial.

Background Certification Information

Background Certification Information

- Manufacturers must:
 - certify to sell in the U.S.
 - perform emissions tests
 - complete certification process
- EPA has authority to confirm emissions data
- EPA may test at NVFEL
- EPA may test at designated contract facility

In order to sell or import engines or vehicles in the United States, a manufacturer must obtain a certificate of conformity (referred to as certificate). To obtain a certificate, a manufacturer must perform emission tests and complete the certification process to ensure that their engines or vehicles meet emission standards. EPA has the authority under the Clean Air Act (as specified under 42 U.S.C. 7525) to confirm emissions data submitted by manufacturers through confirmatory testing.

EPA may perform confirmatory testing on engines or vehicles at EPA's National Vehicle and Fuel Emissions Laboratory (or NVFEL) or at an EPA designated contract test facility. Please refer to specific required engine and vehicle compliance testing procedures as specified in the 40 CFR Part 86 Subpart F, 1039, 1045, 1048, 1051, 1054, 1060 and 1065.

Engine Testing Regulations

The screenshot shows the EPA website's "Engine Testing Regulations" page. The header includes the EPA logo, navigation tabs for "LEARN THE ISSUES", "SCIENCE & TECHNOLOGY", "LAWS & REGULATIONS", and "ABOUT EPA", an "Advanced Search" bar, and an "A-Z Index" link. The main content area is titled "Testing and Measuring Emissions" and features a breadcrumb trail: "You are here: EPA Home » Transportation and Air Quality » Modeling, Testing & Research » Testing & Measuring Emissions » Engine Testing Regulations". The page title is "Engine Testing Regulations". The text explains that EPA has adopted emission standards for almost every kind of engine, from lawn mowers to cruise ships, and that engine manufacturers must follow test procedures specified in the *Code of Federal Regulations*. It provides links to regulatory citations and published information related to proposed or final rules for changed test procedures. It also includes a general set of instructions and requirements for manufacturers certifying their engines to EPA emission standards. A link to a "fact sheet (PDF)" (6 pp, 243K, EPA-420-F-12-054, August 2012) is provided to find the standard-setting part for each type of engine. The text further states that the long-term plan is for all types of engines to follow the procedures in 40 CFR part 1065, excluding aircraft engines and those that require vehicle testing. Currently, only light-duty motor vehicles, motorcycles, and ATVs are subject to vehicle testing under 40 CFR part 86, subpart B. The test procedures referenced on this page address exhaust emissions. See 40 CFR part 86 and part 1060 for evaporative emission standards and test procedures for vehicles and equipment fueled with gasoline or other volatile fuels such as alcohols. The page concludes with the statement: "The following table shows which engine test procedures apply for each category:".

This is EPA's Engine Testing Regulations home page. The link for this page is provided at the end of this tutorial. The engine testing regulations page provides a detailed explanation of the test requirements for specific engine types, along with links to the regulations and test procedures for each engine category. The CFR citations point to where each testing procedure is codified as a federal regulation.

You can also access the regulations through the electronic CFR website. A link to the electronic CFR website is provided at the end of this tutorial.

Manufacturer Requirements

Manufacturer Requirements

- To certify manufacturer must submit emissions data and other certification information
- To submit information manufacturer must establish an EPA manufacturer code and Central Data Exchange (CDX) user account
 - The CDX account is linked to manufacturer code for access to Verify system
 - Users are able to submit electronic information to EPA
- If a manufacturer's engine or vehicle is selected for confirmatory testing the manufacturer will receive a test order

There are manufacturer requirements for certification, which include submitting emissions data and other certification information for EPA review and establishing an EPA manufacturer code and a CDX user account.

CDX is the Agency's single source for collecting electronic environmental data and for accessing the Verify system, which is used by engine and vehicle manufacturers to report certification information to EPA.

All manufacturers must establish a CDX user account and obtain an EPA-assigned three-character manufacturer code in CDX. The CDX account will be linked to the manufacturer code and will give users access to the Verify system, which is used to submit electronic information to the Agency through CDX. More information on setting up a CDX account and establishing a manufacturer code is provided on the following slides.

Manufacturers are then required to submit emissions data and certify that their engines meet emissions requirements through the Verify system using the CDX account and manufacturer code they established. All manufacturers must submit emissions test data and other compliance information through CDX. Manufacturers that are selected for confirmatory testing will receive a test order package which details the next steps in the confirmatory testing process.

CDX and Verify Account Setup

CDX and Verify Account Setup

- Each user must have an individual account
- Sharing accounts or passwords is a violation of the user agreement
- Properly configured CDX account will allow access to Verify
- Required documentation
 - Electronic signature agreement
 - User authorization letter and user information
 - Submitter electronic signature agreement
- Information available on CDX/Verify account setup page
- CDX account setup tutorial

You will need to establish CDX user accounts for all personnel submitting data to EPA. Each user must have an individual account and it is a violation of the CDX user agreement to share accounts or passwords. The CDX user accounts will allow access to the Verify system where users can submit the required testing documents. To establish an account, you will need to submit an electronic signature agreement, a user authorization letter and user information, as well as a submitter electronic signature agreement. All of the forms and required documents can be found on the CDX/Verify account setup page which is available in the Helpful Resources slide at the end of this tutorial. There is also a link to a short tutorial which will walk you through the CDX account setup process.

Manufacturer Code Setup and Uploading to Verify

Manufacturer Code Setup and Uploading to Verify

- Manufacturer code is required to certify engines or vehicles
- Unique identifier directly linked to the certifying company
- Must be used in each certified engine family name
- Detailed information available on the Manufacturer Code Setup page
- All formal data must be submitted through Verify
- Upload page provides specific instructions
- Confirmatory test files are also uploaded through Verify

In order to certify engines or vehicles with EPA, all companies must first obtain a three-character EPA manufacturer code. This code is a unique identifier that provides a direct link to the certifying company and is used in each certified engine family name. A link to the manufacturer code setup page, which has detailed information on how to request a manufacturer code, is provided in the Helpful Resources section at the end of this tutorial.

Once the appropriate CDX accounts are established and ready for use, you will be ready to upload the files and submit data needed for certification and compliance. All formal data must be submitted through Verify, which is accessed with a CDX account. The CDX Upload Instructions for engine manufacturer documents provide detailed information on how to accurately submit data. A link to these instructions is provided at the end of this tutorial.

Confirmatory test files are also submitted through Verify and users submitting confirmatory test files must check the option labeled "Upload Compliance Documents." This option may be accessed under the Compliance Module section of the User Information Spreadsheet.

EPA Confirmatory Test Order Package



EPA Confirmatory Test Order Package

- Manufacturer receives an EPA test order package
- Specifies engine/vehicle selected by EPA for testing
- Provides engine/vehicle testing set-up information
- Indicates test facility location/shipping address
- Provides EPA contact information
- Manufacturer must complete and submit required forms including Test Article Information Smart Sheet (Smart Sheet)


The confirmatory testing process starts when a manufacturer receives a test order package from EPA. The test order specifies what type of engine or vehicle has been selected by EPA for confirmatory testing and provides instructions on what information needs to be submitted. Engine or vehicle testing set-up information is provided. The manufacturer is responsible for shipping the test engine or vehicle to the test facility designated by EPA.

Thirty days are allowed for domestic shipping and up to sixty days for shipping engines or vehicles internationally.

The test order provides EPA contact information, including the name of an EPA representative that manufacturers can contact with questions.

The manufacturer must complete and submit the required forms attached to the test order, including an EPA-provided Test Article Information Smart Sheet.

Example Test Article Information Smart Sheet



United States
Environmental Protection
Agency

Office of Transportation and Air Quality

Example Engine Confirmatory Testing - Engine Information

EPA Engine Family	7XX.xxxx	Engine Model	NNNnnnn
Manufacturer	Abcdef	Manufacturer Code	330
Displacement	6	Low Idle Speed	800 rpm
Engine Serial Number	1235	Minimum Engine Speed	250 rpm
Accumulated Engine Hours	55	Governed Speed	2800 rpm
Governor Type	All Speed	Engine over speed e-stop	3000 rpm
Rated Power - Speed and Torque	2500 rpm	1000 Nm	
Intermediate Speed and Torque	1500 rpm	1500 Nm	
Maximum Power - Speed and Torque	2500 rpm	1000 Nm	
Maximum Torque - Speed and Torque	1500 rpm	1500 Nm	
Fuel Consumption at Max Torque	30 kg/h		
Fuel Consumption at Max Power	40 kg/h		
Maximum Air Flow	970 kg/h		
Exhaust Pipe Diameter(s)	4 in		
Turbo to Intercooler to Engine pipe diameter	4 in		

All required numeric values are numeric.

All mandatory values have been entered.

The following parameters are set at:

2500 rpm

1000 Nm

The Smart Sheet collects the information and data required to complete confirmatory testing. For more information on confirmatory testing, please refer to the Helpful Resources section of this tutorial.

Document and Test Article Delivery to EPA

Document and Test Article Delivery to EPA

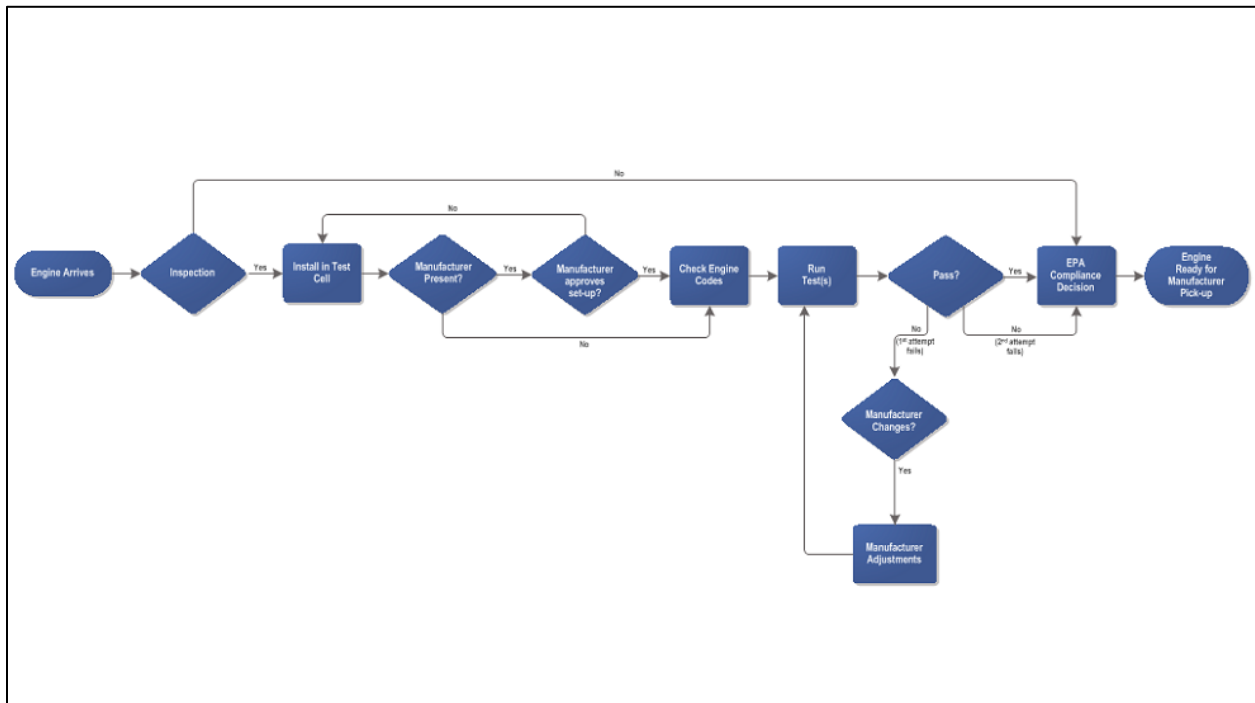
Before EPA begins testing an engine or vehicle the following steps must be taken:

- Test order provides date and location to send documents and engine or vehicle
- EPA must receive test order documents from manufacturer before EPA receives the test engine or vehicle
- EPA notifies the manufacturer that documentation is complete and instructs the manufacturer to deliver engine or vehicle

Before EPA begins testing an engine or vehicle the following steps must be taken:

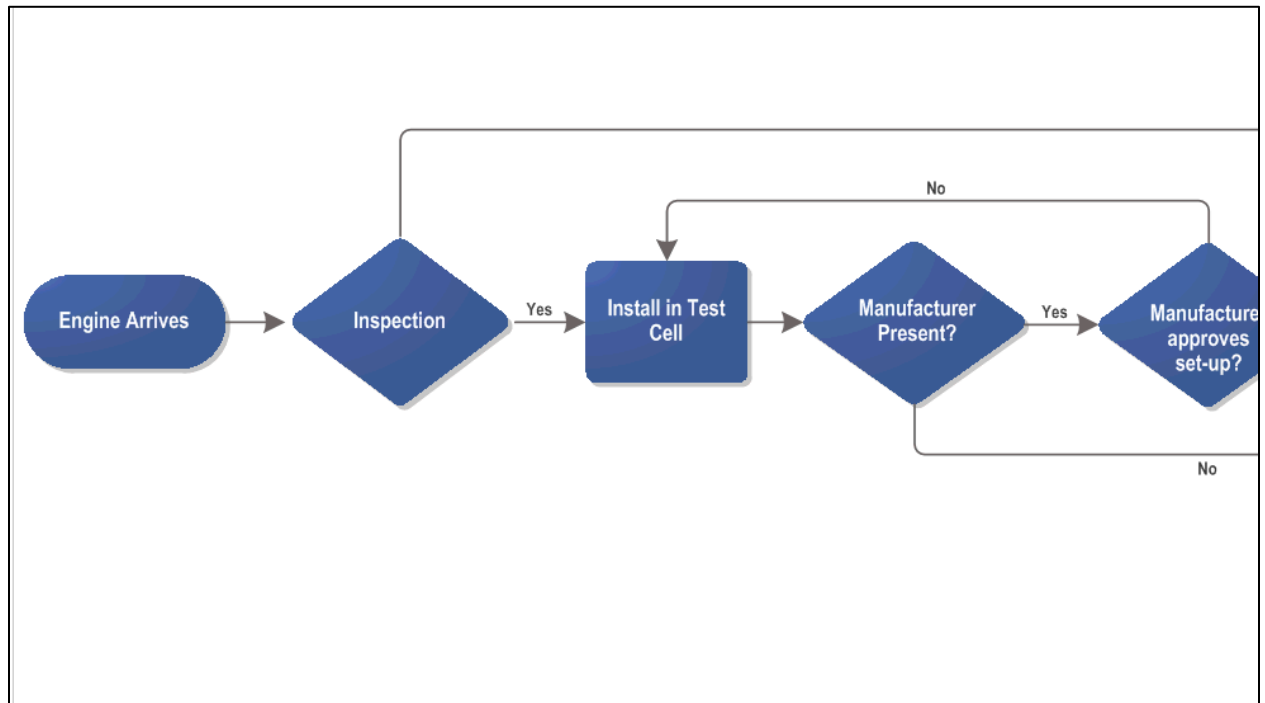
- Manufacturer receives test order from EPA with date and location to send documents and engine or vehicle.
- Manufacturer must submit and EPA must receive all of the required test order documentation before EPA receives the test engine or vehicle.
- EPA notifies the manufacturer that the documentation is complete and instructs the manufacturer to ship the engine or vehicle to NVFEL or to the alternative EPA test site or laboratory.

Confirmatory Testing Process I



The flowchart shown on the screen describes EPA's confirmatory testing process in detail.

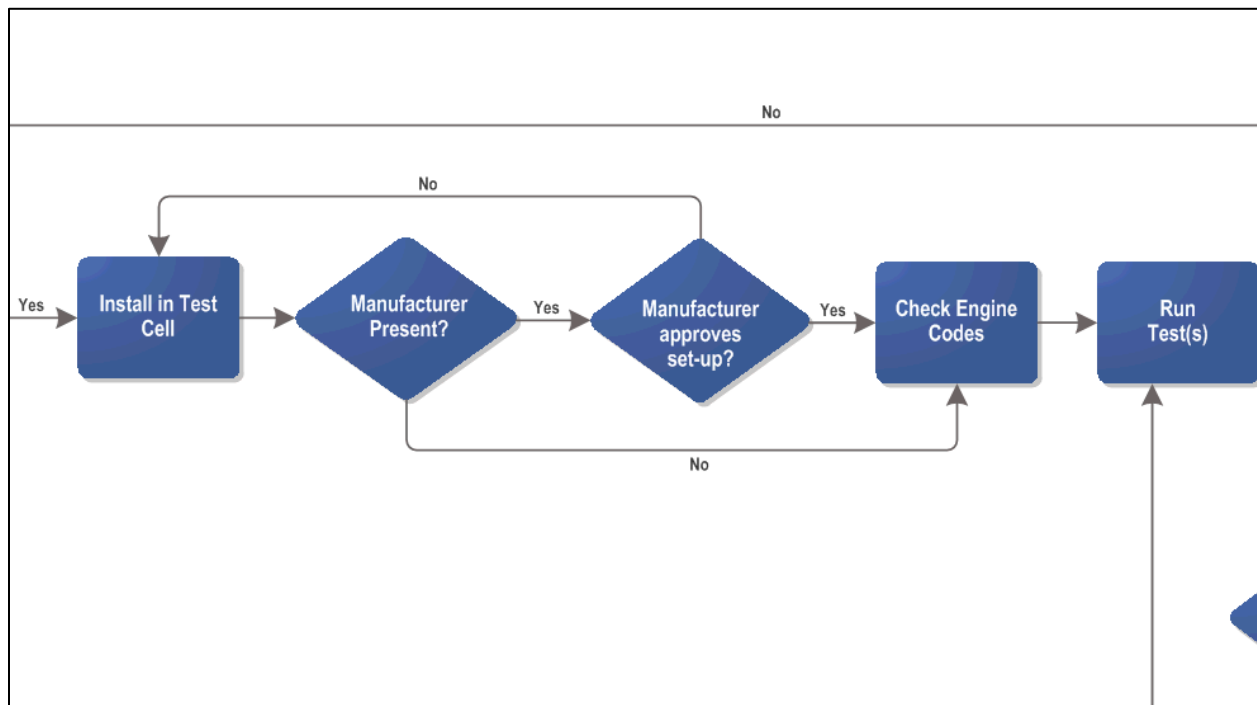
Confirmatory Testing Process II



Upon arrival, the engine will be added to the queue to await testing. EPA will notify the engine manufacturer approximately two weeks prior to the start of testing.

If the engine meets the EPA inspection criteria, it will be set up in the test cell. If it does not meet inspection criteria, a non-compliance decision may be issued.

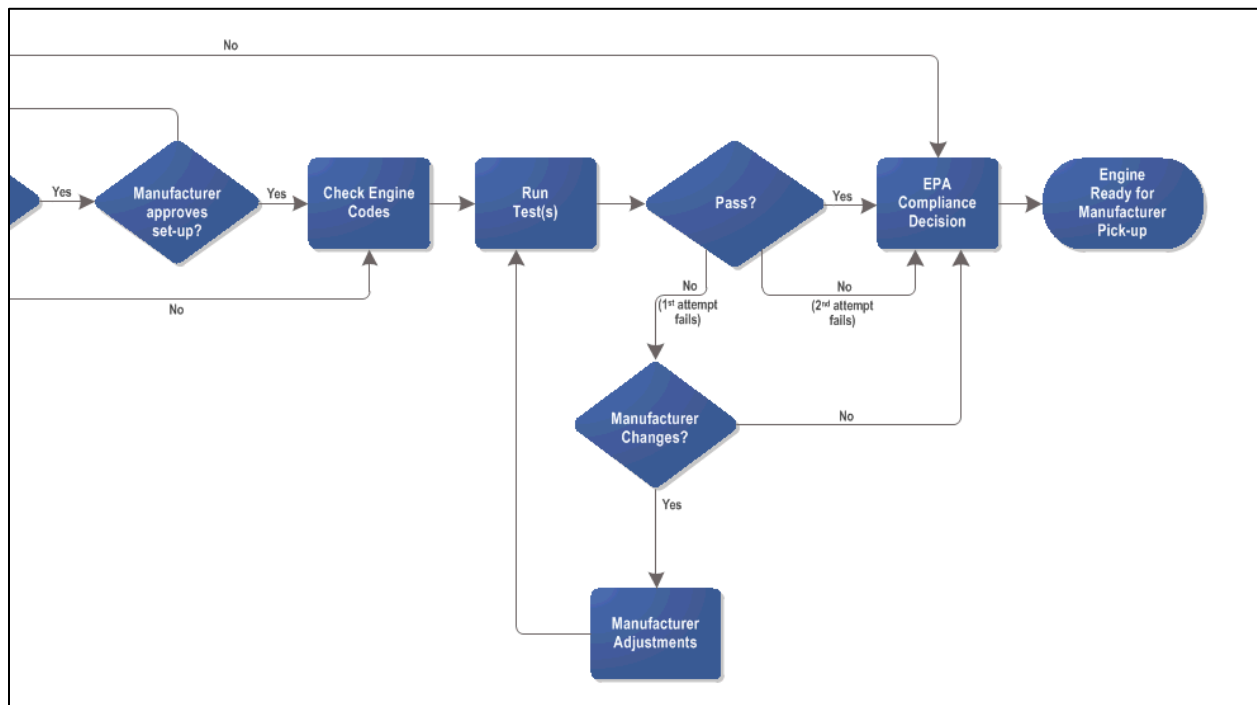
Confirmatory Testing Process III



If the manufacturer is present they may approve the set-up in the test cell. If no manufacturer representative is present, the manufacturer waives the right to inspect before testing. Manufacturers and their representatives are not permitted to observe the testing.

EPA checks manufacturer engine codes and verifies engine performance.

Confirmatory Testing Process IV



The next step is for EPA to run the emissions test. The regulations allow two attempts to pass the test. If the engine passes the test after the first or second attempt an EPA compliance decision is determined.

If the engine does not pass the test on the first attempt, a second attempt maybe allowed, but only at the discretion of EPA. If running a second test is approved the manufacturer may make changes to the engine before the second attempt. One business day is given to make the necessary adjustments and any adjustments must be justified and documented in writing. This information must be provided to EPA certification personnel at the time of testing.

After the manufacturer makes adjustments the compliance test will be run a second time to determine if the engine passes or fails and a compliance decision will be made.

If the manufacturer chooses not to make changes after the first failed test, the test results are reviewed for a compliance decision.

The manufacturer is allowed to review a preliminary emissions test report and the manufacturer will be notified upon the completion of a valid confirmatory test. In all cases EPA will send the official final test results including the compliance decision to the manufacturer after confirmatory testing.

After testing is complete at the test site the engine will be removed from the test cell and the manufacturer is notified that the engine is ready for pick-up. The manufacturer will need to arrange for return shipping of the engine. Engines may be disposed of if not retrieved within a reasonable time.

Summary of Key Points

Summary of Key Points

- Manufacturers must obtain a certificate of conformity to sell engines and vehicles
- Manufacturers must submit required data for compliance through the Verify system in CDX
- If a manufacturer's engine or vehicle is selected for confirmatory testing the manufacturer will receive a test order

To review, this EPA tutorial provided a brief introduction to confirmatory testing. Key points include the following:

- In order to sell engines or vehicles, all manufacturers must obtain a certificate of conformity from EPA.
- Manufacturers must submit required data for compliance or confirmatory testing through the Verify Information System in CDX.
- If a manufacturer's engine or vehicle is selected for confirmatory testing the manufacturer will receive a test order.

Helpful Resources



Helpful Resources

- Engine Testing Regulations: <http://epa.gov/nvfe/testing/regulations.htm>
- Electronic Code of Federal Regulations: <http://www.ecfr.gov>
- General testing procedure: <http://www.epa.gov/otaq/cert/eng-cert/confirmatory/testprocess-flowchart.pdf>
- Engine Setup documents: <http://www.epa.gov/otaq/cert/eng-cert/confirmatory/index.htm>
- CDX/Verify Account Setup: <http://www.epa.gov/otaq/verify/setup.htm>
- CDX Account Setup Tutorial: <http://www.epa.gov/otaq/fuels/renewablefuels/emtsmedia/cdxintrop1.htm>
- CDX: <https://cdx.epa.gov/>
- Manufacturer Code Setup: <http://www.epa.gov/otaq/verify/mfr-code.htm>
- CDX Upload Instructions: <http://www.epa.gov/otaq/cert/eng-cert/confirmatory/420b08010.pdf>
- Confirmatory Testing: <http://www.epa.gov/otaq/cert/eng-cert/confirmatory/>

Shown on your screen is a list of resources discussed throughout the tutorial. Clicking on any of the links will open the selected page in a new window. When you are done, click the Next button to end this overview tutorial.