

## EPA Diesel Technology Verification Application

### Part 1 of 2

This application is the first of two steps to request EPA verification of a diesel engine retrofit or vehicle technology. Once you have completed and submitted this form to EPA

[Tech\\_Center@epa.gov](mailto:Tech_Center@epa.gov) with **“Request for Verification”** in the subject line, a member of EPA’s Technology Verification Team will contact and supply you with Part 2 of the application when needed. Please withhold all confidential business information (CBI) at this stage of the application.

1) Technology Type: Please identify your technology type by completing the table below.

	<b>Technology Type</b> <i>*See Appendix for Technology Definitions</i>	<b>Mark with an “X” to Identify Technology</b>
(A)	<b>Exhaust After-treatment Device</b> (Applied to light-, medium-, or heavy-duty diesel engines/equipment)	
1	Diesel Oxidation Catalyst (DOC) or DOC Combination	
2	Diesel Particulate Filter (DPF) or DPF Combination	
3	Selective Catalytic Reduction Catalyst (SCR)	
4	Other Type of After-Treatment Device (Please Specify)	
(B)	<b>Engine Modification</b> (Modification to light-, medium-, or heavy-duty diesel engines/equipment)	
1	Engine Overhaul (or upgrade kit)	
2	Engine Conversion to Alternative Fuel or Power System (includes hybrid engine replacement)	
3	Other Type of Engine Modification (Please Specify)	
(C)	<b>Vehicle Modification</b> (Used on class-8, long-haul, sleeper cabs or 53’box, van trailers)	
1	Idle Reduction – Auxiliary Power Units (APUs)	
2	Idle Reduction – Fuel Operated Heaters (FOHs)	
3	Idle Reduction – Battery Air Conditioning Systems (BACs)	
4	Idle Reduction – Thermal Storage Systems	
5	Idle Reduction – Truck Stop Electrification (TSE)	
6	Idle Reduction – Rail Auxiliary Power Units (APUs)	
7	Idle Reduction – Rail Fuel Operated Heaters (FOHs)	
8	Idle Reduction – Rail Shore Connection Systems	
9	Idle Reduction – Marine Shore Connection Systems	
10	Idle Reduction – Other (Please Specify)	
11	Aerodynamics – Trailer Gap Reducer, Trailer Side Skirts, or Trailer End Fairings	
12	Aerodynamics – Other Type of Trailer Technology (Please Specify)	
13	Aerodynamics – Other Type of Tractor Technology (Please Specify)	

14	Tires – Low Rolling Resistance Tires (LRRs) for Tractor or Trailer	
15	Other Type of Vehicle Modification (Please Specify)	
(D)	<b>Other</b> (Please describe your technology and given that it falls outside of our established verification categories, additional time will be needed to review and consider your verification request.	

Are you seeking placement on EPA's Emerging Technologies List? (Check one)

For information about the Emerging Technologies Program, visit:

<http://epa.gov/cleandiesel/verification/emerg-process.htm>

Yes ☐

No ☐

- 2) Product description: Please provide the specific name (including product ID numbers and/or serial and part numbers, if applicable) of the product, the manufacturer names making the components, and a short description of the product for which you are requesting verification.

- 3) Contact Information:

	Primary Contact	Secondary Contact
Company Name		
Contact Person		
Telephone (cell)		
Telephone (desk)		
Email Address		
Mailing Address		
Manufacturing Facility Address		

4) Additional Information: Before submitting the form, please answer the following questions by putting an “X” in the respective column.

		<u>Yes</u>	<u>No</u>	<u>N/A</u>
1	Does your technology have regulatory requirements that supersede verification?			
2	Is your technology beyond the research and development stage and is currently commercially available?			
3	If you’ve answered “Yes” to the above question, does the technology have in-use experience in the intended market?			
4	Does your technology have any existing durability, emissions, or overall performance data?			
5	Does your technology have any health or safety concerns?			
6	Is this the first time you have submitted this technology for EPA verification?			
7	Are you currently pursuing verification with the California Air Resources Board (CARB) for this technology?			
8	Does your company offer full warranty over the sale of this product?			
9	Do you accept full responsibility in attesting to the EPA that all submitted information is correct?			

Our program is currently NOT considering the following for verification:

1. *Energy Depleting Hybrid System:* At this time, the agency does not have a certified protocol for testing hybrid technologies in which the energy storage system is charge depleting.
2. *Hydrogen System:* Due to the number of safety concerns regarding hydrogen systems, we currently do not verify these systems.
3. *Fuels and Fuel Additive:* All fuels and fuel additives must be EPA registered **instead of** going through the verification process. Engine additives and lubricants are not eligible for verification. See <http://www.epa.gov/otaq/fuels/registrationfuels/index.htm> for more information.

## Appendix: Technology Definitions

### 1. Exhaust After-treatment Device

- a. Diesel Oxidation Catalyst (DOC) reduces both particulate matter (PM) and hydrocarbons from the exhaust flow. DOCs usually consist of a precious metal coated flow-through honeycomb structure contained in stainless steel housing. As hot diesel exhaust flows through the honeycomb structure, the precious metal coating causes a catalytic reaction that breaks down pollutants into less harmful components. DOCs verified by EPA and CARB are typically effective at reducing PM emissions by 20 to 40 percent, and hydrocarbons by 40 to 70 percent.
- b. Diesel Particulate Filter (DPF) significantly reduces PM emissions from diesel fueled vehicles and equipment. DPFs typically use a porous ceramic, cordierite substrate, or metallic filter, to physically trap PM and remove it from the exhaust stream. The collected PM is reduced to ash during filter regeneration. EPA and CARB verified DPFs generally reduce PM by 85 to 90 percent and hydrocarbons by 70 to 90 percent.
- c. Selective Catalytic Reduction Catalyst (SCR) reduces NO<sub>x</sub> emissions from diesel exhaust by converting it to N<sub>2</sub> and water with the aid of a reducing agent. The reducing agent, also called Diesel Exhaust Fluid (DEF), is typically anhydrous ammonia, aqueous ammonia, or urea. The DEF is added to a stream of exhaust gas and is absorbed onto a catalyst. SCR catalysts are manufactured from various ceramic materials such as titanium oxide, zeolites, and various precious metals. Some SCR applications incorporate the use of a DPF with forced regeneration.
- d. Other type of after-treatment device: Any device that is installed after the exhaust manifold in an engine configuration.

### 2. Engine Modification

- a. Engine overhaul (or upgrade kit): a technology kit that allows for the replacement of various engine parts, while still retaining parts of the existing engine.
- b. Engine conversion to alternative fuel or power system (includes hybrid engine replacement: technology kit/device that replaces parts of the main engine and/or the engine frame or drive train.
- c. Other type of engine modification: any other engine and/or chassis modification kit or technology device

### 3. Vehicle Modification

- a. Idle Reduction technologies allow engine operators to shut down the main engine and refrain from long-duration idling of the main propulsion engine by using an alternative technology.
  - i. Auxiliary Power Units supply cooling, heating, and electrical power to Class 8 trucks, locomotives and other applications when the vehicle is stationary, allowing the main engine to be shut off.

- ii. Fuel Operated Heaters (FOHs) combust fuel drawn from the main engine or other fuel system to provide cab heating and/or coolant heating.
  - iii. Battery Air Conditioning Systems (BACs) use batteries to power an independent electric cooling system. Typically, these systems integrate an FOH to supply heating.
  - iv. Thermal Storage Systems stores energy in cold storage as the truck is driven, and then provides air conditioning when the truck is turned off.
  - v. Truck Stop Electrification (TSE) or Electrified Parking Spaces (ESP) systems operate independently of the truck engine and allow the truck engine to be turned off as the EPS system supplies heating, cooling, and electrical power.
  - vi. Marine and/or Rail Shore Connection systems allow marine vessels or locomotives to “plug into” an electrical power source instead of using its diesel auxiliary engines while at the port or railyard. This system may also include cables, cable management systems, shore power coupler systems, distribution control systems, and power distribution.
  - vii. Other Idle Reduction device: any other device that provides an alternative source of power, thus allowing the main diesel engine to be shut off.
- b. Aerodynamic Technologies can minimize aerodynamic drag and maintain smoother air flow over a tractor-trailer vehicle. This technology can decrease fuel consumption as well as NO<sub>x</sub> and CO<sub>2</sub> emissions.
- i. Trailer gap reducer, trailer side skirts, or trailer end fairings
  - ii. Other type of trailer technology, any other technology that reduces drag on the trailer
  - iii. Other type of tractor technology, any other technology that reduces drag on the trailer
- c. Low Rolling Resistance Tires (LRRs) for tractor or trailer: any tire technology that reduce resistance and provides a fuel or emissions benefit for the engine.