



# Air Resources Board



**Matthew Rodriguez**  
Secretary for  
Environmental Protection

**Mary D. Nichols, Chairman**  
9480 Telstar Avenue, Suite 4  
El Monte, California 91731 • www.arb.ca.gov

**Edmund G. Brown Jr.**  
Governor

October 13, 2014

Reference No. CIHD-2014-042

Mr. Rocco Bellino  
Roush Industries  
12249 Levan Road  
Livonia, MI 48150

Dear Mr. Bellino:

This is in regards to your request for certification of Roush Industries INC's (Roush) dedicated liquefied petroleum gas (LPG) retrofit system for installation on 2013 model-year Ford Motor Company 6.8L Heavy-Duty Engine.

The Air Resources Board (ARB) has processed the Executive Order for Roush's LPG system in accordance with the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines." Certification is granted based on Roush's certification data generated using assigned deterioration factors. Roush's LPG system is certified to the following standards:

	FTP Emissions (grams/brake horsepower-hour)				
	NMHC	NOx	CO	PM	HCHO
HDO 110,000 Mile Standard	0.14	0.20	14.4	0.01	0.01

Enclosed please find Executive Order B-58-6, approving Roush's dedicated LPG retrofit system for sale in California in accordance with Sections 43004 and 43006 of the Health and Safety Code for the following vehicle:

<u>Vehicle Make</u>	<u>Intended Service Class</u>	<u>Engine Family</u>	<u>System</u>
Ford Motor Company	Heavy-Duty Otto	DFMXE06.8BW5	Dedicated LPG

*The energy challenge facing California is real. Every Californian needs to take immediate action to reduce energy consumption. For a list of simple ways you can reduce demand and cut your energy costs, see our website: <http://www.arb.ca.gov>.*

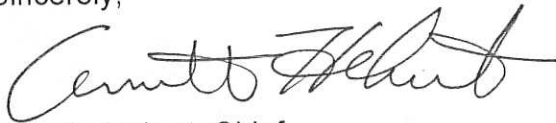
California Environmental Protection Agency

Mr. Rocco Bellino

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If you have any question, please contact Kimberly Pryor, Manager, at (626) 575-6640, or by e-mail at [kpryor@arb.ca.gov](mailto:kpryor@arb.ca.gov).

Sincerely,



Annette Hebert, Chief  
Emissions Compliance, Automotive Regulations and Science Division

Enclosure

cc: Kimberly Pryor, Manager  
Compression-Ignition and Heavy-Duty Certification Section  
Emissions Compliance, Automotive Regulations and Science Division

State of California  
AIR RESOURCES BOARD

EXECUTIVE ORDER B-58-6

Relating to Conversion of Engines to Alternative Fuels

ROUSH INDUSTRIES INC.

Pursuant to the authority vested in the Air Resources Board by Sections 43004 and 43006 of the Health and Safety Code and Section 10753(d) of the Revenue and Taxation Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-14-012;

IT IS ORDERED AND RESOLVED: The dedicated liquefied petroleum gas (LPG) retrofit system, manufactured by Roush Industries Inc. (Roush) of 12249 Levan Road, Livonia, MI 48150, is certified as described below for the following 2013 model-year Ford Motor Company 6.8 liter heavy-duty engine.

Fuel Type: Gasoline to LPG

Engine Family: DFMXE06.8BW5      Displacement: 6.8 liter

Engine Models: F450/550 Chassis Cab, F650 Chassis Cab, Step Van, Motor Home

Major Retrofit System Components: See Attachment A

All emission control systems, excluding the gasoline fuel and evaporative emission control systems, and the engine manufacturer's tune-up label shall be retained. The engine shall be adjusted to Roush's tune-up specifications. The production retrofit system shall be in all material respect the same as that for which certification is granted.

The certification exhaust emission standards for this engine family in grams per brake horsepower-hour are:

Emission Standard	<u>NMHC</u>	<u>NOx</u>	<u>CO</u>	<u>PM</u>	<u>HCHO</u>
HDO @110,000 Miles	0.14	0.20	14.4	0.01	0.01

The certification exhaust emission values for this engine family with the dedicated LPG retrofit system in grams per brake horsepower-hour are:

Certification Levels		<u>NMHC</u>	<u>NOx</u>	<u>CO</u>	<u>PM</u>	<u>HCHO</u>
	@110,000 Miles	0.07	0.08	2.2	0.000	0.000

BE IT FURTHER RESOLVED: The retrofit system manufacturer has submitted and the Executive Officer hereby approves the materials in the application to demonstrate certification compliance with the emission standards set forth in Section 4 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer has stated that the retrofit system described above is identical, as defined in Title 13, California Code of Regulations, Section 2030(c), to the alternative fuel system described in the certification application of its engine family DRIIE06.8BW5 which was certified by ARB per Executive Order A-344-0039-1. At the request of the manufacturer, the retrofit system is certified under Section 2030(c) (expedited approval using carry-over / carry-across of data from new engine certification).

BE IT FURTHER RESOLVED: The retrofit system manufacturer has submitted and the Executive Officer hereby approves the materials in the application to demonstrate certification compliance with the on-board diagnostic system requirements in Section 6 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer shall provide a supplemental emission control information label, which shall be affixed in a permanent manner adjacent to the original Vehicle Emission Control Information label, and shall comply with the labeling requirements described in Section 3(e) of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer has submitted and the Executive Officer hereby approves the materials required to demonstrate certification compliance with the warranty requirements, including warranty notification under Sections 3(f)(5) , 3(g), and 9 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer may be subject to in-use enforcement emission testing as described in Section 12 of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines."

BE IT FURTHER RESOLVED: The retrofit system manufacturer shall maintain a record of each engine on which the retrofit system is installed as required in Section 3(h) of the "California Certification and Installation Procedures for Alternative Fuel Retrofit Systems for 2004 and Subsequent Model Year On-Road Motor Vehicles and Engines." The manufacturer shall supply a copy of installation information upon request and annually report the annual sales by March 1 of the following calendar year.

The retrofit system certified under this Executive Order must conform to all applicable California emission regulations. Certification of the retrofit system shall not be construed as a certification to sell, offer for sale, or advertise any component of the retrofit system as an individually certified part.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Executed at El Monte, California on this 13 day of October 2014.



Annette Hebert, Chief  
Emissions Compliance, Automotive Regulations and Science Division



**SECTION 6 – EXHAUST EMISSIONS PARTS LIST**

- Test Group: DRIIE06.8BW5

**2013 MODEL YEAR ENGINE**

<u>Part Name</u>	<u>Vehicle</u>	<u>Part Number</u>	<u>Part Differs from OEM</u>
Exhaust Calibration DDF618BR500	School Bus	OEM PCM Assembly (Roush Tracking Number) BB3A – 12A650 – AA(1)	■
Catalyst	School bus	BC34 – 5E212 – AC	
Fuel Pump (2)		P11BB – 10A020 – AA	■
Cylinder Head Temperature Sensor		9L3A – 6G004 – AA	
Camshaft Position Sensor		1W7E – 6B288 – AB	
Crankshaft Position Sensor		1W7E – 6C315 – AA	
PCV Valve		9L1E – 6A666 – AA	
Univ. Heated Oxygen Sensor – Upstream (2)		8F9A – 9Y460 – GA	
Heated Oxygen Sensor – Downstream		BL3A – 9G444 – DA	
Fuel Injectors (10)		P11BB – 03D021 – AA	■
Fuel Rail Pressure Control Module		P11BB – 9G866 – CC	■
Pedal Position Sensor Assembly (ETC) - Adjustable		BC34 – 9F836 – CA	
Pedal Position Sensor Assembly (ETC) - Fixed		BC3A – 9F836 – DD	
Mass Airflow/Intake Air Temperature Sensor		BR31 – 12B579 – AA	
Knock Sensor (2) (deactivated)		AL3A – 12A699 – BA	
Electric Throttle Body		9C3E – 9F991 – CA 9C3E – 9F991 – BA (alt)	
Throttle Body Position Sensor		AG1E – 9E928 – AA 6L2E – 9E928 – AA (alt)	
Integrated Fuel Pressure Temperature Sensor (IPTS)		P10C3 – 9G756 – AA	■
SRM (Smart Relay Module)		<u>School Bus</u>	
(Interfaces IPTS sensor to PCM via CAN)		P11BB – 03P200 – AB	■

■ - Part differs from OEM vehicles.