State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER D-689

Relating to Exemptions under
Section 27156 of the Vehicle Code

EnviroEnergy Solutions, Inc.
Non-Thermal Plasma Diesel Exhaust Device

Pursuant to the authority vested in the Air Resources Board by Section 27156 of the Vehicle 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-02-003;

IT IS ORDERED AND RESOLVED: That installation of the Non-Thermal Plasma Diesel Exhaust (NTPDE) device, manufactured by EnviroEnergy Solutions, Inc. of 35 Seacoast Terrace, Suite 11 R, Brooklyn, New York 11235, has been found not to reduce the effectiveness of the applicable engine emission control systems, and therefore, the NTPDE device is exempt from the prohibitions in Section 27156 of the Vehicle Code for installation on on-road vehicles equipped with 1994 through 2006 model-year diesel engines with displacements from 5 to 15 liters.

The engines must be certified to no greater than 5.0 g/bhp-hr oxides of nitrogen, 0.10 g/bhp-hr particulate matter, and 15.5 g/bhp-hr carbon monoxide emission standards. This Executive Order excludes engines originally certified with an after treatment emission control system such as a diesel oxidation catalyst or a diesel particulate filter.

The NTPDE device exempted under this Executive Order and its major components are identified in Attachment A.

This Executive Order is based on emission tests conducted by EnviroEnergy Solutions, Inc. with the NTPDE device. Test data showed no adverse impact on engine emissions. The same emission impact is expected when the NTPDE device is installed on any of the engines listed above.

This Executive Order is valid provided that installation instructions for the NTPDE device do not recommend tuning the engines to specifications different from those of the engine manufacturer.

Changes made to the design or operating conditions of the NTPDE device, as exempted by the Air Resources Board, which adversely affect the performance of the engine's emission control system, shall invalidate this Executive Order.

Marketing of the NTPDE device using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior approval is obtained from the Air Resources Board.

This Executive Order shall not apply to any NTPDE device advertised, offered for sale, sold with, or installed on an engine or a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

This Executive Order does not constitute any opinion as to the effect the use of the NTPDE device may have on any warranty either expressed or implied by the engine manufacturer.

No claim of any kind, such as "Approved by the Air Resources Board," may be made with respect to the action taken herein in any advertising or other oral or written communication.

In addition to the foregoing, the Air Resources Board reserves the right in the future to review this Executive Order and the exemption provided herein to assure that the exempted add-on or modified part continues to meet the standards and procedures of California Code of Regulations, Title 13, Section 2222, et seq.

THIS EXECUTIVE ORDER DOES NOT CONSTITUTE A CERTIFICATION, ACCREDITATION, APPROVAL, OR ANY OTHER TYPE OF ENDORSEMENT BY THE AIR RESOURCES BOARD OF ANY CLAIMS OF THE APPLICANT CONCERNING ANTI-POLLUTION BENEFITS OR ANY ALLEGED BENEFITS OF ENVIROENERGY SOLUTIONS, INC.'S NON-THERMAL PLASMA DIESEL EXHAUST DEVICE.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order. The Executive Order may be revoked only after a ten-day written notice of intention to revoke the Executive Order, in which period the holder of the Executive Order may request in writing a hearing to contest the proposed revocation. If a hearing is requested, it shall be held within ten days of receipt of the request, and the Executive Order may not be revoked until a determination is made after a hearing that grounds for revocation exist.

Executed at El Monte, California, this 23 day of June 2011.

Annette Hebert, Chief
Mobile Source Operations Division

Attachment A

Non-Thermal Plasma Diesel Exhaust Device	
Model	Engine Horsepower
NTPDE-200	125-200
NTPDE-300	225-300
NTPDE-400	325-400

Component	Part Number
Housing with inlet and outlet	NTPDE-1
Collecting and plasma generating module	NTPDE-2
High voltage power supply	NTPDE-3
Limit switch	NTPDE-4
Insulators for module	NTPDE-5
Insulators for high voltage feed	NTPDE-6
Bolts, nuts, gaskets, washers	NTPDE-7
Diesel oxidation catalyst	NTPDE-8

EVALUATION SUMMARY

Manufacturer Name: EnviroEnergy Solutions, Inc.

Name of Device: Non-Thermal Plasma Diesel Exhaust Device

Background:

EnviroEnergy Solutions, Inc. of 35 Seacoast Terrace, Suite 11 R, Brooklyn, New York 11235 has applied for exemption of its Non-Thermal Plasma Diesel Exhaust (NTPDE) device from the prohibitions in Section 27156 of the California Vehicle Code (VC 27156). The device is designed for on-road vehicles equipped with 1994 through 2006 model-year diesel engines.

Recommendation:

Grant exemption to EnviroEnergy Solutions, Inc. and issue Executive Order D-689. The exemption covers installation of the NTPDE device on on-road vehicles equipped with 1994 through 2006 model-year diesel engines with displacements from 5 to 15 liters. The engines must be certified to no greater than 5.0 g/bhp-hr oxides of nitrogen, 0.10 g/bhp-hr particulate matter, and 15.5 g/bhp-hr carbon monoxide emission standards. The exemption excludes engines originally certified with an after treatment emission control system such as a diesel oxidation catalyst or a diesel particulate filter. The NTPDE device exempted under this Executive Order and its major components are identified in Attachment A.

Device Description:

The NTPDE device is an after treatment system designed to reduce diesel engine particulate matter (PM) emissions via electrostatic precipitation. It is used as an add-on system on engines that were not originally certified with any after treatment emission control systems. The system comprises of parallel, horizontal ionizing and collection plates and a diesel oxidation catalyst. The number of plates varies proportionally with the power rating of the engine. PM is first charged by a constant high voltage electrical discharge then collected on the collection plates. The collected PM is washed off using water after plate-removal from the system or in situ at regular engine maintenance intervals.

Discussion/Basis for the Recommendation:

To demonstrate no adverse impact on engine emissions, EnviroEnergy Solutions, Inc. tested the NTPDE device on two engines. The results follow:

Test Engine	Test	NMHC/*THC*	NMHC+NOx	NOx	CO	PM
2006 Cummins ISX 400	FTP	0.067	2.03	1.96	0.41	0.068
	EURO III	0.05	1.81	1.76	0.24	0.054
	Standards	**0.5**	**2.3**	**--**	**15.5**	**0.09**
2002 Caterpillar C-15 475	FTP	*0.02*	--	3.25	0.77	0.071
	EURO III	*0.04*	--	3.71	0.25	0.028
	Standards *(EURO III)*	***1.3***	**--**	**4.0/*6.0***	**15.5**	**0.10**

Test results showed that emissions with the NTPDE device are below the applicable emission standards. EnviroEnergy Solutions, Inc.'s NTPDE device is not expected to have any adverse impact on exhaust emissions when installed on any of the engines listed in the Executive Order and meets the requirements for a VC 27156 exemption.