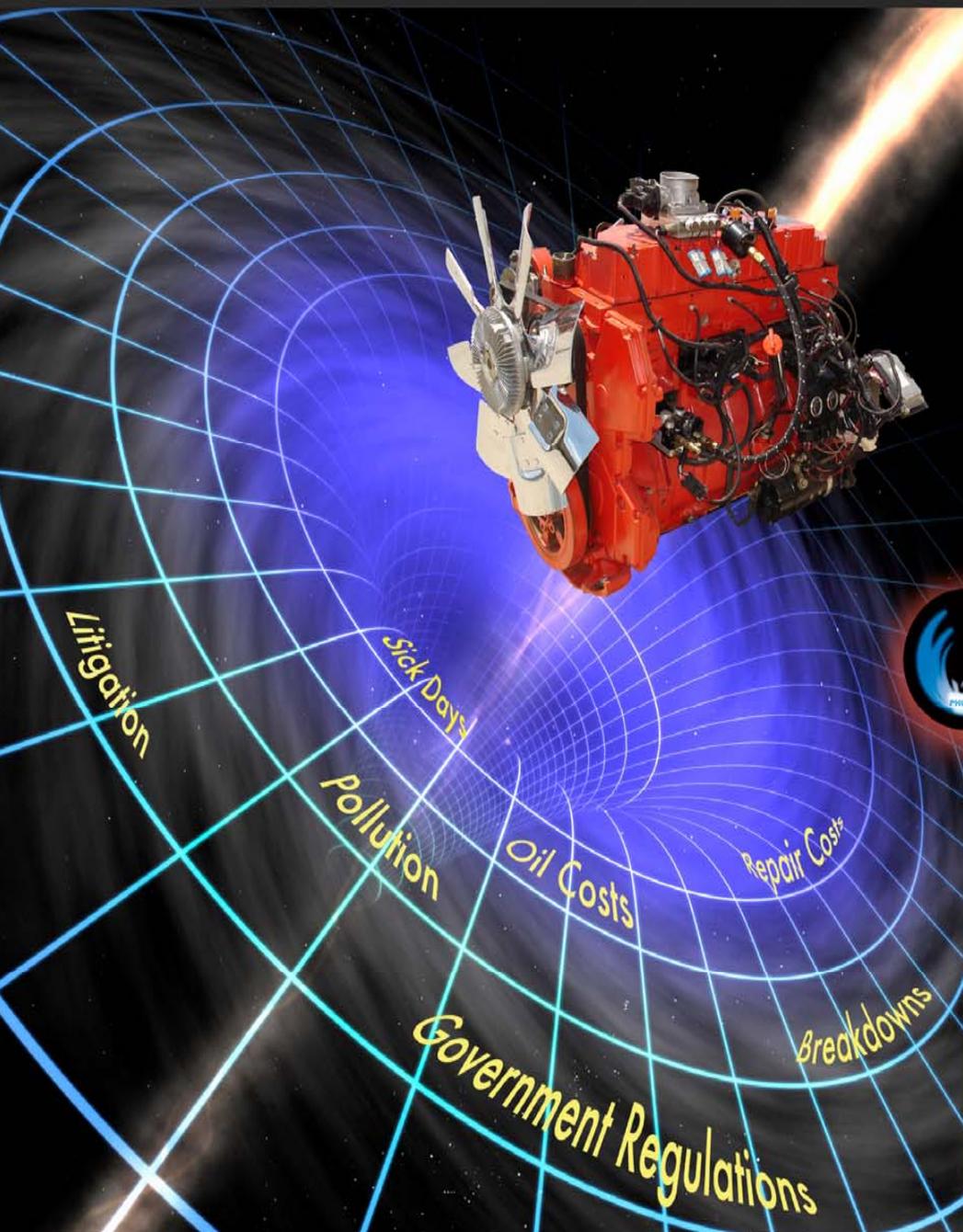


RISE ABOVE WITH A PHOENIX™



**EMISSIONSOLUTIONSINC**

TOMORROW'S TECHNOLOGY TODAY

## PHOENIX NG 7.6L

- New OEM Engine with Full 2 Year Warranty
- 5 Year Emissions Warranty
- Meets **2009** EPA/CARB Emission Mandates
- Proactive Compliance
- 5+ Years Added Reliability
- No Idling Required
- Drivers Breathe Clean Emissions
- Community Friendly
- Improved Fleet Productivity



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## **ESI Phoenix NG 7.6L Heavy-Duty Natural Gas Engine Design Objectives**

- **New OEM or Repower Benefits**
  - Improved performance
  - Proven platform reliability
  - Innovative patented technology
  - Environmentally friendly
  - Market New OEM & Repower
  - No Major tools or Disruptive new technology training
  - Improved Safety
  - Simply a cleaner healthier solution with less noise





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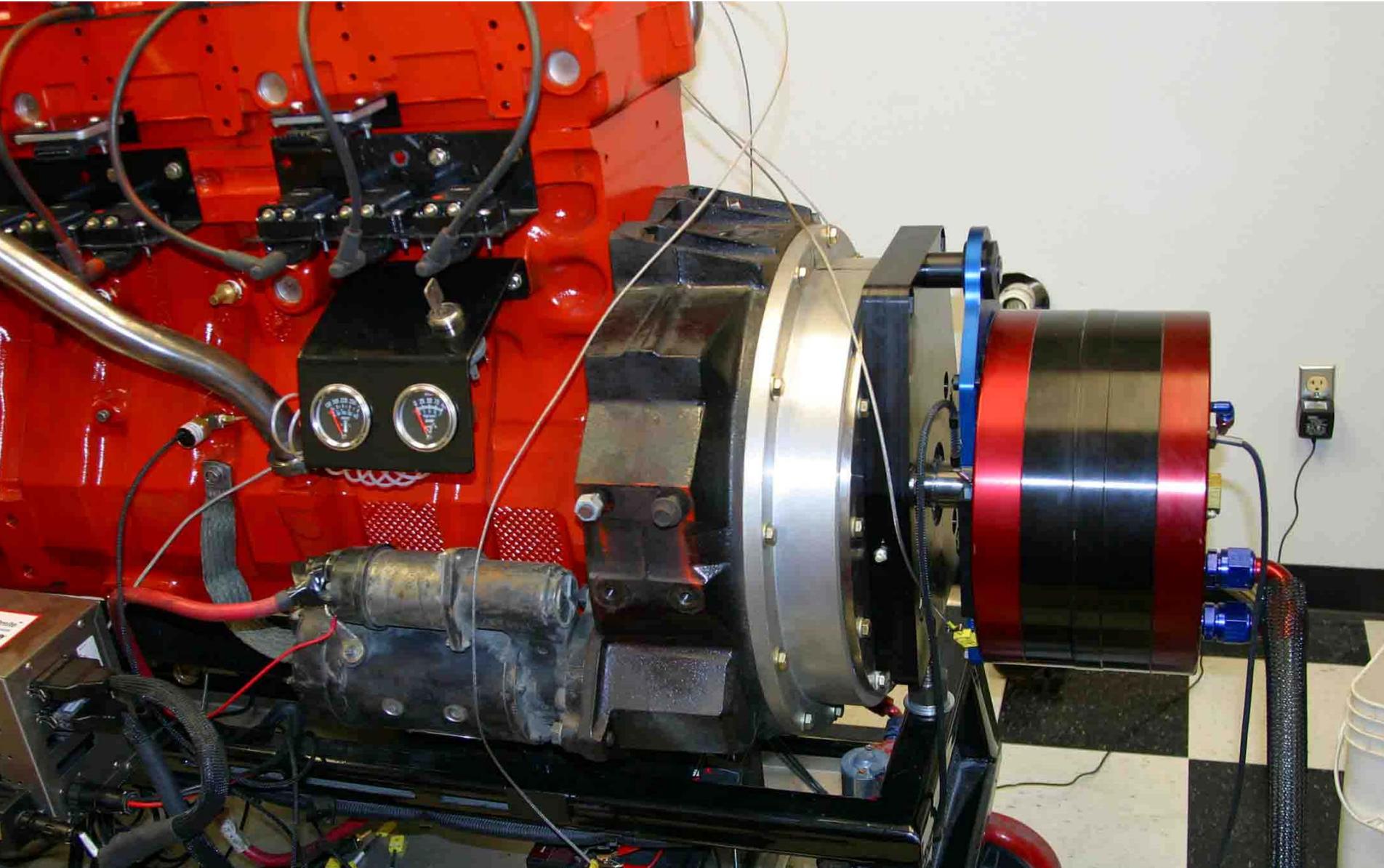


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## “Replacing Older Diesel Engines with Clean Gaseous Fueled Engines”

265hp(198kw)

**Phoenix NG 7.6L**

Product Specification

*Durability through innovative design*

### General Data

Ratings:	175-265 hp
(hp/torque mapped to meet critical payloads)	460-820 lb-ft
Combustion System	Dedicated Spark-Ignited
After Cooler	Air to Air
Engine Type	Four cycle, In-Line Six
Aspiration	Turbocharged
Compression Ratio	10.5:1 Fumigation
Displacement	7.6 Liters

### Features and Benefits

Delivers up to 265 hp with superior torque rise (up to 820 lb-ft), for quicker response, improved acceleration and pulling power. Designed with Wet-Type cylinder liners and cryogenically hardened combustion components for improved heat dissipation and heat resistance to extend product and emission life cycle. Two Year parts & labor warranty (unlimited miles).

### Fuel System

- Stoichiometric, Closed loop Adaptive Learn Technology
- Computerized control management for on-demand peak performance and emission control
- Adaptive Fuel Types: CNG, LNG, Propane
- SwRI test results (g/bhp-hr): NOx 0.513, NMHC 0.059, PM 0.009
- **CARB Executive Order & EPA Certification (g/bhp-hr): NOx+NMHC = 0.8, PM = 0.01**

*Specifications and design subject to change without notice*

Emission Solutions, Inc 2001 Central Circle, Suite 106, McKinney, TX 75069, Phone 972.369.0099  
www.emissionsolutionsinc.com info@emissionsolutionsinc.com



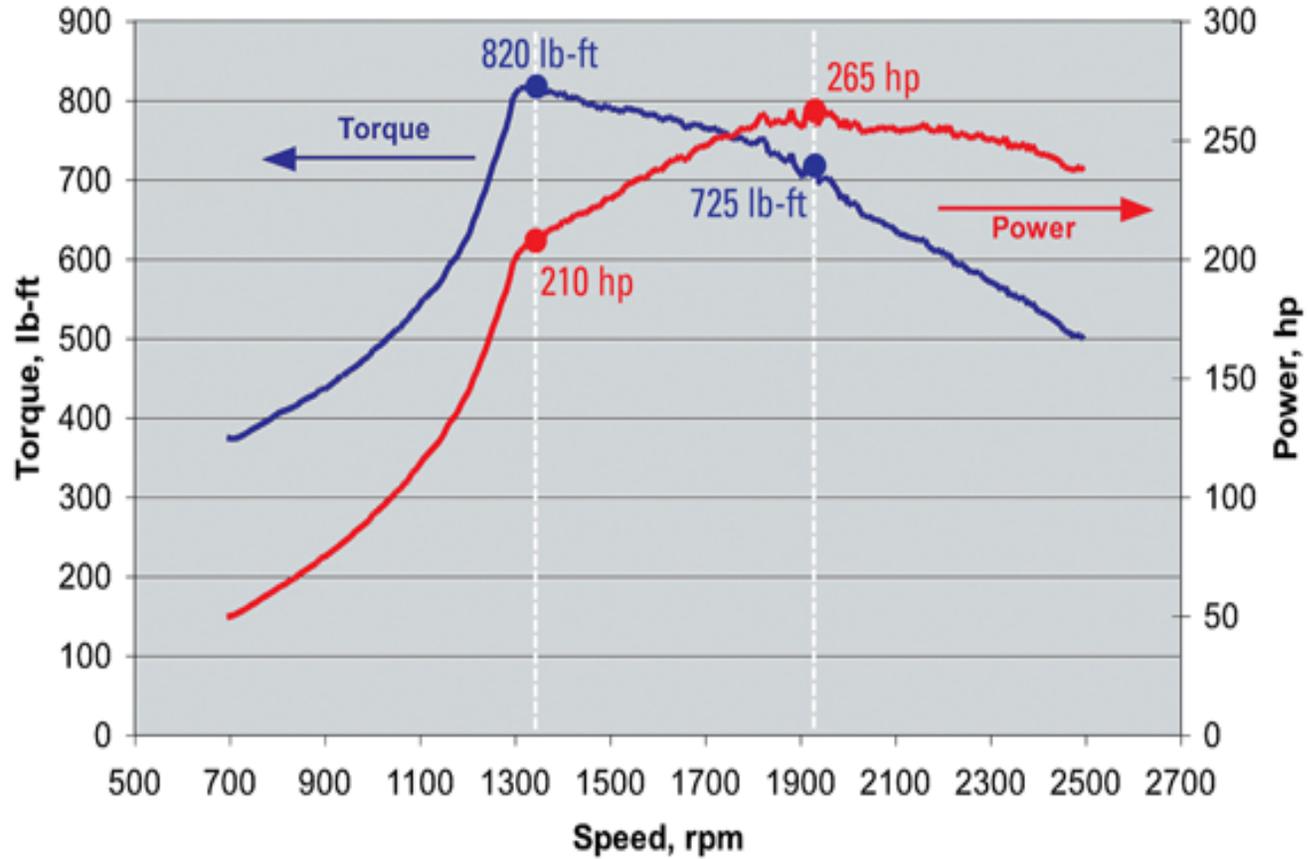
**Patent No.: US 6,910,269**



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# PHOENIX 7.6 NG HDE PERFORMANCE

265 HP (198 KW)





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, DC 20460

2006 Model Year Certificate of Conformity

Manufacturer: **EMISSION SOLUTIONS, INC.**  
Engine Family: **6EMSH07.6NG1**  
Certificate Number: **EMS-MHDD-06-01.1**  
Intended Service Class: **MHDD**  
Fuel Type: **NATURAL GAS**  
FELs: g/bHp-hr **NMHC+NOx: N/A NOx: N/A PM: N/A**  
Effective Date: **10/25/2005**  
Date Issued: **MAY 16 2006**

A handwritten signature in black ink, appearing to read "Karl J. Simon", is written over a horizontal line.

Karl J. Simon, Acting Director  
Compliance and Innovative Strategies Division  
Office of Transportation and Air Quality

- **EPA Certificate of Conformity**
- **Standard NO<sub>x</sub>+NMHC = 0.8 g/bhp-hr**
- **PM = 0.01 g/bhp-hr**

Pursuant to Section 206 of the Clean Air Act (42 U.S.C. section 7525), 40 CFR Part 86, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which represent the following motor vehicle engines, by engine family, and is subject to the terms and conditions prescribed in those provisions.

This certificate of conformity covers only those new motor vehicle engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 86 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 86.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 86.096-7, 86.606, and 86.1006 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 86. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 86.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

*Due to canceling FEL's from the original certification, this certificate replaces certificate number EMS-MHDD-06-01.*



Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

**IT IS ORDERED AND RESOLVED:** The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE <sup>1</sup>	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS <sup>2</sup>	ECS & SPECIAL FEATURES <sup>3</sup>
			CNG	Diesel	MHDD	
2006	6EMSH07.6NG1	7.6		Diesel	MHDD	TBI, CAC, TC, WU-TWC, TWC, O2S, HO2S
ENGINE (L)			ENGINE MODELS / CODES (rated power, in hp)			
7.6			ESI.7.6l / ESI0001 (264)			
.			.			
.			.			
.			.			

<sup>1</sup> not applicable; GVWR=gross vehicle weight rating; 13 CCR xyz=Title 13, California Code of Regulations, Section xyz; 40 CFR 86.abc=Title 40, Code of Federal Regulations, Section 86.abc;  
<sup>2</sup> star: 1p=high power; 1w=low/mid;  
<sup>3</sup> CNG/LNG=compressed/liquefied natural gas; LPG=liquefied petroleum gas; E85=85% ethanol fuel; MF=multi fuel a.k.a. BF=bi fuel; DF=dual fuel; FF=flexible fuel;  
<sup>2</sup> L/MH HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDO=heavy duty Otto;  
<sup>3</sup> ECS=emission control system; TWC/O2=three-way/oxidizing catalyst; WU (prefix)=warm-up catalyst; DPF=diesel particulate filter; HO2S/O2S=heated/oxygen sensor; HAFS/IAFS=heated/air-fuel-ratio sensor (a.k.a. universal or linear oxygen sensor); TBI=throttle body fuel injection; SF/MPFI=sequential/multi port fuel injection; DGI=direct gasoline injection; GCARB=gaseous carburetor; IDI/DDI=indirect/direct diesel injection; TC/SC=turbo/super charger; CAC=charge air cooler; EGR=exhaust gas recirculation; PAIR/AIR=pulsed/secondary air injection; SPL=smoke pull limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; 2 (prefix)=parallel; 2 (suffix)=in series. (2004may)26

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.1 (urban bus) or 13 CCR 1956.8 (other than urban bus); 2) the EURO and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, in g/bhp-hr, for this engine family. "Diesel" CO, EURO and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [ ] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.1 or 13 CCR 1956.8 are in parentheses.)

	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	*	*	*	*	0.9	*	15.5	*	0.01	*	*	*
FEL	*	*	*	*	*	*	*	*	*	*	*	*
CERT	*	*	*	*	0.8	*	3.9	*	0.01	*	*	*
NTE	*	*	*	*	*	*	*	*	*	*	*	*

<sup>1</sup> g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; EURO=Euro III European Steady-State Cycle; NTE=Not-to-Exceed; STD=standard or emission test cap; FEL=family emission limit; CERT=certification level; NMHC/HC=non-methane hydrocarbon; NOx=oxides of nitrogen; CO=carbon monoxide; PM=particulate matter; HCHO=formaldehyde;

**BE IT FURTHER RESOLVED:** Certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

**BE IT FURTHER RESOLVED:** That the listed engine models have been certified to the FTP optional NMHC+NOx and PM reduced emission standard(s) listed above pursuant to 13 CCR 1956.1 or CCR 1956.8.

**BE IT FURTHER RESOLVED:** For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels) and 13 CCR 2035 et seq. (emission control warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

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

This Executive Order hereby supersedes Executive Order A-366-0001 dated January 19, 2006.

Executed at El Monte, California on this 3 day of August 2006.

  
**Annette Hebert, Chief**  
 Mobile Source Operations Division

- California Air Resource Board
- Optional NOx+NMHC = 0.9 g/bhp-hr
- PM = 0.01 g/bhp-hr



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## Applications –Public Works





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69200

PHOENIX  
MG 7.0L R30

  
SILVER EAGLE  
DISTRIBUTORS, L.P.  
HOUSTON, TEXAS  
TABC 0-574640

WARNING  
EQUIPPED  
WITH ELECTRONIC  
BRAKE SYSTEM

NOTICE  
SEE OWNER'S MANUAL  
FOR SAFETY INFORMATION





COMMISSIONER  
LARGE AND MID-SIZE  
BUSINESS DIVISION

DEPARTMENT OF THE TREASURY  
INTERNAL REVENUE SERVICE  
WASHINGTON, D.C. 20224

May 21, 2007

Emission Solutions, Incorporated  
Mr. J.R. Moore, President  
2001 Central Circle, Suite 106  
McKinney, Texas 75069

Dear Mr. Moore,

We have reviewed the certification dated January 3, 2007 prepared by Emission Solutions, Incorporated which was submitted under Notice 2006-54 relative to the Model Year 2006 ESI Phoenix 7.6L HDNGE Engine 1. The certification asserts that vehicles equipped with the specified engine meet the requirements of the Alternative Motor Vehicle Credit as a Qualified Alternative Fuel Motor Vehicle.

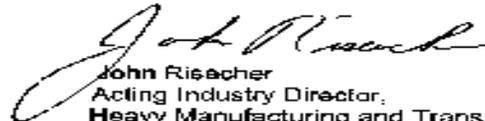
We have determined that a purchaser of the Qualified Alternative Fuel Motor Vehicles described below may rely on the certification concerning the vehicle's qualification for the Qualified Alternative Fuel Motor Vehicle Credit.

New or Used Vehicles with Gross Vehicle Weight Class of More than 14,000 lbs. but not more than 26,000 lbs repowered to operate solely on Natural Gas with the Model Year 2006 ESI Phoenix 7.6L HDNGE Engine -- Credit Amount - \$ 20,000

New or Used Vehicles with Gross Vehicle Weight Class of More than 26,000 lbs. repowered to operate solely on Natural Gas with the Model Year 2006 ESI Phoenix 7.6L HDNGE Engine -- Credit Amount - \$ 32,000

Should you have any questions, please contact Senior Program Analyst, Robert Lew (732) 452-6109 at your earliest convenience.

Very truly yours,



John Risacher  
Acting Industry Director,  
Heavy Manufacturing and Transportation

Attachment:  
- Copy of Emissions Solution, Inc. Certification



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## **What Makes ESI Engine Repowering Cost Effective?**

Efficiency loss of 2007 and 2010 Diesel Engines vs. Phoenix  
Engine

\$32,000 IRS Tax Credit

EPA rules that ESI technology qualifies as "diesel retrofit" for  
State Implementation Plans

**Available State and Federal Grants**



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## ESI Heavy-Duty Engine Product Roll-Out

- Sustaining (Carry-Over)

- ESI Phoenix NG (190-265hp/440-820lb-ft torque).

(PM= .01 g/bhp-hr and NO<sub>x</sub>+NMHC= .8 g/bhp-hr)

- New Product Introduction (NPI)

- ESI Phoenix NG in-line six (190-340hp/440-1150lb-ft torque).
- ESI Phoenix NG V-8 (175-325hp/460-950lb-ft torque).

(IIQ2007 Certification: PM = .01 g/bhp-hr and NO<sub>x</sub>+NMHC= .2 g/bhp-hr)



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## Contacts

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972-369-0092

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