



2012 NATIONAL CONFERENCE
**EQUIPMENT FLEET
MANAGEMENT**

Peter McGrath

**EPA GREEN HOUSE
GAS EMISSIONS
2014-2017**

AGENDA

- *2010 EPA Commitment*
- *2014-17 Green House Gas Standards*
 - *Engine*
 - *Vehicle*



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2010 EPA COMMITMENT

- **Meet 2010 standards**
- **Achieve EPA / CARB compliance and certification**
- **Submitted Engine to EPA**
- **STAY TUNED**



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UNTIL CERTIFICATION.....

 AIR RESOURCES BOARD	NAVISTAR, Inc.	EXECUTIVE ORDER A-004-0306 New On-Road Heavy Duty Engines
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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 SIZE (L)	FUEL TYPE ¹	STANDARDS & TEST PROCEDURE	ATTENDED SERVICE CLASS	ECB & SPECIAL FEATURES ²	DIAGNOSTIC ³
2012	CNVXH07570GA	12.4	Diesel	Diesel	HRD	DDI, TCI2, CAC2, EDM, EGR, CAC2, PTOX	OCB (P)
PRIMARY ENGINES IDLE EMISSIONS CONTROL ⁴		ADDITIONAL IDLE EMISSIONS CONTROL ⁵					
30g		N/A					
ENGINE (L)		ENGINE MODELS / CODES (rated power, in hp)					
12.4		A475/A475 (A75); A450/A450 (A50); A450M1/A450MT (A50)					

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 2) the EORO 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, 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 pertain to 13 CCR 1956.8 air in 50/50/50/50.)

in g/bhp-hr	NMHC		NOx		NMHC/NOx		CO		PM		HC+D	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.14	0.14	2.20	0.20	*	*	15.5	15.5	0.01	0.01	*	*
NTE	*	*	3.50	0.50	*	*	*	*	*	*	*	*
CERT	0.03	0.01	2.45	0.38	*	*	0.4	0.01	0.004	0.004	*	*
NTE	0.21	*	0.75	*	*	*	15.4	15.4	0.02	0.02	*	*

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.

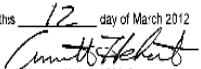
BE IT FURTHER RESOLVED: That the manufacturer may not introduce into commerce any engines under this Executive Order unless the manufacturer has sufficient averaging, banking and trading credits according to the provisions of 40 CFR Part 86 to cover each engine introduced into commerce. Failure to comply with these provisions shall be cause for the Executive Officer to deem all engines produced without covered credits uncertified and subject to civil penalties pursuant to Health and Safety Code Section 43154.

BE IT FURTHER RESOLVED: Excess in vehicle applications exempted per 13 CCR 1956.8(a)(8)(B), engines in this engine family certified under 13 CCR 1956.8(a)(8)(C) (130 g/bhp-hr CO) and section 36.8.4 of the incorporated California Exhaust Emissions Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles adopted Dec. 12, 2002, as last amended Sep. 1, 2006, shall be provided with an approved "Certified Clean Idle" label that shall be affixed to the vehicle into which the engine is installed.

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), 13 CCR 1968.2 (on-board diagnostic, full or partial compliance), 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.

Executed at El Monte, California on this 12 day of March 2012


Annette Hebert, Chief
Mobile Source Operations Division



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NATIONAL VEHICLE AND FUEL EMISSIONS LABORATORY
2585 PLYMOUTH ROAD
ANN ARBOR, MICHIGAN 48105-2486

OFFICE OF
AIR AND RADIATION

February 27, 2012

•Continue to work with EPA towards Final Letter

•Use credits to continue to produce & ship products.

Tom Kramer
Chief Certification Engineer
Navistar, Inc
10400 West Ninth Avenue
Melrose Park, Illinois 60160

Dear Mr. Kramer:

Enclosed are amended conditional certificates of conformity for the following Navistar heavy-duty diesel engine families:

CNVXH06410GA, CNVXH07570GA, CNVXH07570GB, CNVXH07570GC, CNVXH09280GA, and CNVXT09280GB

The original certificates of conformity for the above-noted engine families limited production through February 29, 2012. Due to more current information provided by Navistar on February 8, 2012 and the intervening promulgation of the nonconformance penalty (NCP) rule, Navistar has indicated that it has sufficient averaging, banking, and trading (ABT) credits to afford production until late in the 2012 calendar year. Navistar has indicated that it would use such credits to sell engines only in California and states that have adopted California's standards, and would use NCPs to sell engines in the remaining states. EPA thus believes it appropriate to remove the limitation from the original certificates. We remind Navistar that the production of any engines that exceeds the number of credits held by Navistar may be considered by EPA as a violation of the Clean Air Act and applicable regulations and EPA may void *ab initio* the above-noted certificates.

To facilitate better tracking of Navistar's ABT credits, these amended certificates are conditioned upon Navistar providing updated credit reports within 5 business days of the end of each month. If you do not accept this condition, then these certificates are null and void *ab initio*. Introduction into commerce by Navistar of any engine under the authority of these certificates of conformity will be deemed to be an acceptance by Navistar of this condition for these families.



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HEAVY DUTY GREEN HOUSE GAS REGULATIONS



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HD GREENHOUSE GAS REGULATION

- EPA/NHTSA created first ever MD/HD Greenhouse Gas Regulation
 - Final Rule published on **9/15/2011**
- 2014 vehicle & engine standards
 - **10-13%** CO₂ reduction*
- 2017 vehicle & engine standards
 - Total **18-23%** CO₂ reduction*
- More complex than light-duty
- Separate Engine & Vehicle Standards
- Compliance begins **January 1, 2014**
 - EPA goal is to get existing technology off of the shelf & onto new trucks
 - Flexibility built in to ensure fleets can get the right truck for their business



Reduced CO₂ → Improved Fuel Economy



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**From 2010 Baseline*

HD GHG REGULATION REQUIREMENTS

Emissions: Now

– Engines:

- A total of **four** (4) engine standards for NO_x, CO, HC, and PM on three (3) engine categories Light-Heavy Duty Diesel, Medium-Heavy Diesel, and Heavy-Heavy Duty Diesel (LHD, MHD, HHD)

– Vehicles:

- **none**

• Emissions: Then (& Now)

– Engines:

- **Thirteen** (13) new engine emission standards (eleven CO₂ standards plus N₂O and methane)

– Vehicles:

- **Twenty-four** (24) new vehicle subcategory standards that must be average across three (3) vehicle categories



GHG **ENGINE** STANDARDS - OVERVIEW

- Engine Standards – MY2014/2017
 - Regulate **CO₂**, **N₂O**, **CH₄**
 - Allows for Average, Banking & Trading program [ABT]
 - Multiple strategies to comply in 2014-16
 - Additional opportunity for Advanced and Innovative technologies



DIESEL ENGINE CO₂ EMISSION STANDARDS

(Grams of CO₂/bhp·hr)

LHD (Class 2B – 5)		MHD (Class 6 – 7)		HHD (Class 8)	
2014-16	2017 and later	2014-16	2017 and later	2014-16	2017 and later
600	576	600	576	567	555

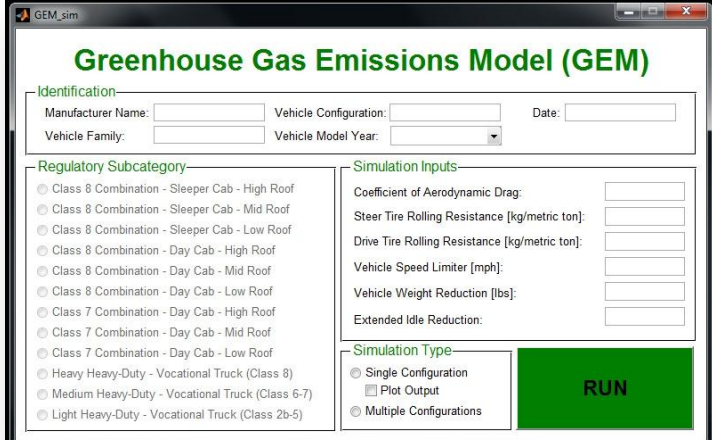
Note: LHD – Light heavy-duty / MHD – Medium heavy-duty / HHD – Heavy heavy-duty



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GHG **VEHICLE** STANDARDS - OVERVIEW

- Requirements differ based on the type of Vehicle
 - Vocational (*everything not a Tractor*)
 - Tractors
 - Pick-up & Vans
- Compliance determined by inputs into the EPA software tool (GEM) to predict CO₂ emissions
- All vehicles will be assessed by GEM
- Early certification opportunity for MY2013 **(NOW!)**



The screenshot shows the Greenhouse Gas Emissions Model (GEM) software interface. The title bar reads "GEM_sim". The main window title is "Greenhouse Gas Emissions Model (GEM)".

Identification

Manufacturer Name: Vehicle Configuration: Date:
Vehicle Family: Vehicle Model Year:

Regulatory Subcategory

- Class 8 Combination - Sleeper Cab - High Roof
- Class 8 Combination - Sleeper Cab - Mid Roof
- Class 8 Combination - Sleeper Cab - Low Roof
- Class 8 Combination - Day Cab - High Roof
- Class 8 Combination - Day Cab - Mid Roof
- Class 8 Combination - Day Cab - Low Roof
- Class 7 Combination - Day Cab - High Roof
- Class 7 Combination - Day Cab - Mid Roof
- Class 7 Combination - Day Cab - Low Roof
- Heavy Heavy-Duty - Vocational Truck (Class 8)
- Medium Heavy-Duty - Vocational Truck (Class 6-7)
- Light Heavy-Duty - Vocational Truck (Class 2b-5)

Simulation Inputs

Coefficient of Aerodynamic Drag:
Steer Tire Rolling Resistance [kg/metric ton]:
Drive Tire Rolling Resistance [kg/metric ton]:
Vehicle Speed Limiter [mph]:
Vehicle Weight Reduction [lbs]:
Extended Idle Reduction:

Simulation Type

- Single Configuration
- Plot Output
- Multiple Configurations

RUN



VOCATIONAL VEHICLE CO₂ EMISSION STD'S

**Table 4 – Vehicle CO₂ Emission Standards for Vocational Trucks
(grams of CO₂/ton·mile)**

LHD (Class 2B – 5)		MHD (Class 6 – 7)		HHD (Class 8)	
2014-16	2017 and later	2014-16	2017 and later	2014-16	2017 and later
388	373	234	225	226	222

Note: LHD – Light heavy-duty / MHD – Medium heavy-duty / HHD – Heavy heavy-duty



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VOCATIONAL VEHICLES (ANYTHING NOT A TRACTOR)



GFM_sim

Greenhouse Gas Emissions Model (GEM)

Identification
Manufacturer Name: [] Vehicle Configuration: [] Date: 22-Feb-2011
Vehicle Family: [] Vehicle Model Year: []

Regulatory Subcategory
 Class 8 Combination - Sleeper Cab - High Roof
 Class 8 Combination - Sleeper Cab - Mid Roof
 Class 8 Combination - Day Cab - High Roof
 Class 8 Combination - Day Cab - Mid Roof
 Class 8 Combination - Day Cab - Low Roof
 Class 7 Combination - Day Cab - High Roof
 Class 7 Combination - Day Cab - Mid Roof
 Class 7 Combination - Day Cab - Low Roof
 Heavy Heavy-Duty - Vocational Truck (Class B)
 Medium Heavy-Duty - Vocational Truck (Class 6-7)
 Light Heavy-Duty - Vocational Truck (Class 2b-5)

Simulation Inputs
Coefficient of Aerodynamic Drag: []
Driver Weight (lbs): []
Vehicle Speed Limiter (mph): []
Vehicle Weight Reduction (lbs): []
Extended Idle Reduction: []
Simulation Type
 Single Configuration
 Plot Output
 Multiple Configurations

ASSESS VEH



TIRES ONLY!



**Estimated
CO₂
(g/ton-mile)**

Compliant?

Not Compliant?

Navistar's goal is to ensure customers can continue to purchase the Tires best suited for their application



TRACTORS – DAYCABS/ SLEEPERS



ProStar



LoneStar



9900



TranStar

ASSESS VEHICLE



Aerodynamics

Tires

IDLE Shutdown

VSL

Weight

**Estimated
CO₂**

(g/ton-mile)

Compliant?

Not Compliant?



GHG CERTIFIED VEHICLES

- Greenhouse Gas Emissions Label – Stating the Emissions related components on the vehicle

NAVISTAR, INC.				
VEHICLE EMISSIONS CONTROL INFORMATION				
THIS CLASS 8 VOCATIONAL TRUCK				
CONFORMS WITH U.S. EPA REGULATIONS FOR 2013 MODEL YEAR				
HEAVY DUTY VEHICLES UNDER 40 CFR PART 1037. THIS VEHICLE				
MAY BE EQUIPPED WITH COMPONENTS THAT REDUCE				
GREENHOUSE GAS EMISSIONS				
EMISSION REDUCTION COMPONENTS:				
LRRD				
EPA VEHICLE FAMILY: DNVX2VOCVXXC DATE OF MFG 01/2012				
FUEL TYPE: DIESEL			VIN:	

- Emissions warranty protecting that a component is free from defects in materials or workmanship that cause the vehicle to fail to conform to the GHG requirements



2012 NATIONAL CONFERENCE
**EQUIPMENT FLEET
MANAGEMENT**

THANK-YOU



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