

# SACRAMENTO EMERGENCY CLEAN AIR TRANSPORTATION (SECAT) PROGRAM ADVISORY

**November 13, 2009**

## 2010-Compliant Diesel Engine Documentation Requirements

The new SECAT Guidelines adopted by the Sacramento Area Council of Governments Board of Directors on November 12, 2009 modified the maximum funding available for Fleet Modernization projects using 2010-compliant diesel engines.

The SECAT program will pay up to \$60,000 towards the replacement of a pre-2003 heavy-duty diesel vehicle with a vehicle equipped with a 2010-compliant engine. Additionally, since the emissions are significantly lower on a 2010-compliant engine, the project cost effectiveness may allow applicants to qualify for full funding at a lower annual mileage commitment. The program will also include all taxes and fees towards the 50% cost cap by basing the cap on the total vehicle purchase price.

The definition of a 2010-compliant engine is as follows:

- A heavy-duty diesel engine certified by the California Air Resources Board to a standard or FEL at or below 0.20 g/bhp-hr NO<sub>x</sub> and 0.01 g/bhp-hr PM; or
- Emissions from an engine certified to the 2004 through 2006 model year heavy-duty diesel engine emissions standard that is equipped with a VDECS that reduces NO<sub>x</sub> exhaust emissions by more than 85 percent and PM exhaust emissions by at least 85 percent (Level 3, Mark 5); or
- Emissions from an engine certified to the 2007 through 2009 model year heavy-duty diesel engine emissions standard that is equipped with a VDECS that reduces NO<sub>x</sub> exhaust emissions by more than 70 percent and PM exhaust emissions by at least 85 percent (Level 3, Mark 4)

To qualify as a 2010-compliant engine, all applicants must provide the certification documents for the engine at the time of application. If the desired engine does not have a valid Executive Order from the California Air Resources Board, the project will be evaluated as a 2007-compliant engine subject to a \$50,000 cost cap, 50% of the pre-tax vehicle purchase price, or the maximum cost effective amount based on annual mileage for 2007 emissions.

An eligible Executive Order is attached to this advisory for reference.

If you have questions about this advisory, please contact Kristian Damkier at (916) 874-4892 or [kdamkier@airquality.org](mailto:kdamkier@airquality.org).

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>	DIAGNOSTIC <sup>6</sup>
2010	AVPTH12.8S01	12.8	Diesel	Diesel	HHDD	DDI, TC, CAC, ECM, EGR, OC, DPF, SCR, SPL	EMD
<b>PRIMARY ENGINE'S IDLE EMISSIONS CONTROL <sup>5</sup></b>		<b>ADDITIONAL IDLE EMISSIONS CONTROL <sup>5</sup></b>					
30g		N/A					
<b>ENGINE (L)</b>	<b>ENGINE MODELS / CODES (rated power, in hp)</b>						
12.8	See attachment for engine models and ratings (clean idle engines are labeled as 50-State compliant engines)						

<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; L=liter; hp=horsepower; kw=kilowatt; hr=hour;  
<sup>2</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>3</sup> L/M/H HDD=light/medium/heavy heavy-duty diesel; UB=urban bus; HDO=heavy duty Otto;  
<sup>4</sup> ECS=emission control system; TWC/OC=three-way/oxidizing catalyst; NAC=NOx adsorption catalyst; SCR-U / SCR-N=selective catalytic reduction - urea / - ammonia; WU (prefix) =warm-up catalyst; DPF=diesel particulate filter; PTOX=periodic trap oxidizer; HO2S/O2S=heated/oxygen sensor; HAFS/AFS=heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); TBI=throttle body fuel injection; SFI/MFI=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 / EGR-C=exhaust gas recirculation / cooled EGR; PAIR/AIR=pulsed/secondary air injection; SPL=smoke puff limiter; ECM/PCM=engine/powertrain control module; EM=engine modification; 2 (prefix)=parallel; (2) (suffix)=in series; SCR = Selective Catalytic Reduction system  
<sup>5</sup> ESS=engine shutdown system (per 13 CCR 1956.8(a)(6)(A)(1); 30g=30 g/hr NOx (per 13 CCR 1956.8(a)(6)(C)); APS=internal combustion auxiliary power system; ALT=alternative method (per 13 CCR 1956.8(a)(6)(D)); Exempt=exempted per 13 CCR 1956.8(a)(6)(B) or for CNG/LNG fuel systems; N/A=not applicable (e.g., Otto engines and vehicles);  
<sup>6</sup> EMD=engine manufacturer diagnostic system (13 CCR 1971); OBD=on-board diagnostic system (13 CCR 1971.1);

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 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, 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 1956.8 are in parentheses.).

in g/bhp-hr	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.14	0.14	0.20	0.20	*	*	15.5	15.5	*	*	*	*
FEL	*	*	*	*	*	*	*	*	0.00	0.00	*	*
CERT	0.01	0.06	0.11	0.10	*	*	*	*	0.003	0.001	*	*
NTE	0.21		0.30		*		19.4		0.00		*	

<sup>4</sup> g/bhp-hr=grams per brake horsepower-hour; FTP=Federal Test Procedure; EURO=Euro III European Steady-State Cycle, including RMCSET=ramp mode cycle supplemental emissions testing; 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:** 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.

Executed at El Monte, California on this 9 day of November 2009.

  
Annette Hebert, Chief  
Mobile Source Operations Division

Volvo Powertrain Corporation

ATTACHMENT

A-242-0055

Engine Family	1. Engine Code	2. Engine Model	3. BHP@RPM (SAE Gross)		4. Fuel Rate: mm/stroke @ peak HP (for diesels only)		5. Fuel Rate: mm/stroke @ peak HP (for diesels only)		6. Torque @ RPM (SEA Gross)		7. Fuel Rate: mm/stroke @ peak torque		8. Fuel Rate: (lbs/hr) @ peak torque		9. Emission Control Device Per SAE J1930
			500 @ 1700	1700	307.5	174.5	1812 @ 1050	336.8	118.1	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 500	500 @ 1700	1700	307.5	174.5	1812 @ 1050	336.8	118.1	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 475	475 @ 1800	1800	279.7	168.1	1734 @ 1050	324.6	113.8	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 435	435 @ 1700	1700	286.7	162.7	1711 @ 1050	317.8	111.4	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 425	425 @ 1700	1700	273.2	155.1	1600 @ 1050	297.7	104.4	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 405	405 @ 1700	1700	250.2	142.0	1508 @ 1000	278.1	92.9	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 375	375 @ 1700	1700	236.7	134.4	1506 @ 1000	277.6	92.7	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	D13H - 500P													
PTH12.8S01	N/A	D13H - 435P													
PTH12.8S01	N/A	MP8 - 505E	505 @ 1700	1700	308.2	174.9	1824 @ 1100	340.3	125.0	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 500E	500 @ 1700	1700	308.2	174.9	1839 @ 1200	340.3	136.3	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 455E	455 @ 1700	1700	282.3	160.2	1750 @ 1200	324.7	130.1	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 445E	445 @ 1700	1700	286.0	162.3	1780 @ 1100	330.4	121.3	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 425E	425 @ 1700	1700	271.8	154.3	1604 @ 1200	296.2	118.7	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 415E	415 @ 1700	1700	266.9	151.5	1702 @ 1100	314.4	115.5	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 505C	505 @ 1500	1500	341.9	171.3	1824 @ 1100	336.2	123.5	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 445C	445 @ 1500	1500	311.3	155.9	1780 @ 1100	330.4	121.3	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 415C	415 @ 1500	1500	290.1	145.3	1702 @ 1100	314.4	115.5	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 505M	505 @ 1700	1700	309.2	175.5	1837 @ 1100	340.7	125.1	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 455M	455 @ 1700	1700	282.1	160.2	1715 @ 1100	317.9	116.8	EM, EC, TC, CAC, DI, EGR, DPF, SCR					
PTH12.8S01	N/A	MP8 - 425M	425 @ 1700	1700	274.1	155.6	1602 @ 1100	296.6	109.0	EM, EC, TC, CAC, DI, EGR, DPF, SCR					