

Proposed Modifications to the In-Use Off-Road Diesel Vehicle Regulation



December 19, 2008
Sacramento, CA

California Environmental Protection Agency
Air Resources Board



Outline

- Overview of Regulation
- VDECS Availability
- Proposed Modifications
- Economic Trends
- Contacts



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Overview of Off-Road Regulation



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Off-Road Regulation

- Applies to off-road vehicles with diesel engine 25 hp and up, "drive" engine only
- Excludes personal use and agricultural operations
- Requirements:
 - Labeling and annual reporting beginning in 2009
 - Limits unnecessary idling
 - Prohibits adding dirty, older used vehicles to fleets
 - Requires fleets to meet fleet average targets or show annual progress toward them

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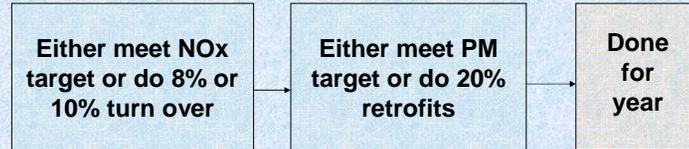
Requirements Vary by Fleet Size

Fleet Size Category	Description	Compliance Dates
Small	Fleet <= 2,500 hp, or Municipality fleet in low population county	March 1, 2015 - March 1, 2025
Medium	Fleet with 2,501 to 5,000 hp	March 1, 2013 - March 1, 2020
Large	Fleet with more than 5,000 hp, or State or Federal Government fleet	March 1, 2010 - March 1, 2020

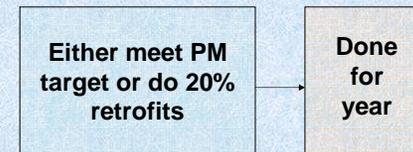
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Annual Compliance Process

Large and Medium Fleets: NOx and PM Requirements



Small Fleets: PM Requirements ONLY



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Multiple Credit Opportunities

- Credit for early actions prior to March 1, 2009
 - Double credit for PM retrofits
 - Credit for repowers (even to Tier 1)
 - Credit for replacement in excess of 8%/year from 2006 - 2009
- Double credit for electric vehicles until 2016
- Turnover credit for vehicles designated as low use
- PM and NOx credit provided for retiring vehicles within shrinking fleets

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VDECS Availability



Loader with Passive DPF



Scraper with Passive DPF

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What is an Exhaust Retrofit?

- Systems that reduce specific pollutants
 - Can control one or more pollutants such as PM, NOx, or both
 - Installed on an in-use vehicle
- Systems most commonly are:
 - Diesel particulate filters (DPFs)
- Once a device is verified with ARB, it becomes a verified diesel emission control strategy (VDECS)

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ARB Verification of Retrofits

- Ensures emission reductions and durability
- Provides end user warranty
 - 4-5 years and 2,600-4,200 operating hours
 - A current list of verified devices is located at: www.arb.ca.gov/diesel/verdev/verdev.htm

Level	PM Reduction	Typical Device
1*	≥ 25%	Oxidation catalyst
2	≥ 50%	Flow-thru filter
3	≥ 85%	Particulate filter



DPF durability demonstration on concrete

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* - No credit for Level 1 in off-road regulation

Verification Database

<http://www.arb.ca.gov/diesel/verdev/vdb/disclaimer.php>

Search by:

VDECS, Engine Family, or
Manufacturer / Model Year / Displacement

Home	Programs	Rulemaking	Board Meetings	Laws & Regulations	Data & Statistics
RETROFIT DEVICE					
4 Results Matching VCP7.0RZDARB					
YEAR	ENG MFR	ENG FAMILY	DISP	DEVICE MFR	DEVICE NAME
1997	Caterpillar	VCP7.0RZDARB	7	Caterpillar	Diesel Particulate Filter
1997	Caterpillar	VCP7.0RZDARB	7	Caterpillar	DPF
1997	Caterpillar	VCP7.0RZDARB	7	Engine Control Systems	Purifier
1997	Caterpillar	VCP7.0RZDARB	7	Huss	FS-MK

Active/Passive DPFs

- The volume of PM generated by a diesel engine will fill up (load) a DPF over time; thus the trapped PM must be burned off or "regenerated" periodically
 - Active regeneration: Needs heat to regenerate – electricity or burning additional fuel
 - Passive regeneration: No outside energy required
 - Some fleets have a strong preference or need for passive filters

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Verified Level 3 Off-road Devices

(Before July 2007 Board Hearing)

- Only three systems, all are active DPFs

Product	Applicability
Cleaire Horizon	Conditionally verified, active plug-in
Engine Control System Combifilter	2007 or older, active plug-in
HUSS Umwelttechnik FS_MK	Most engines through 2007 model year, active fuel-burner

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Verified Level 3 Off-road Devices

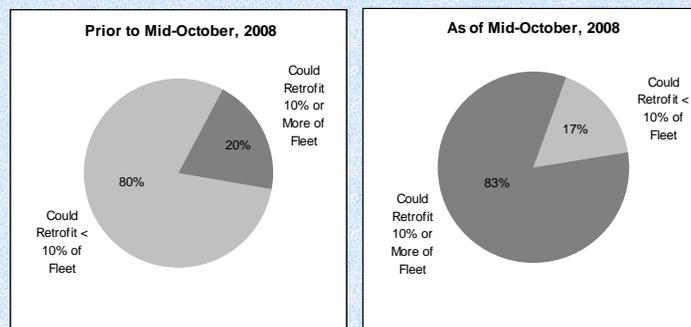
(as of 11/20/08)

Product	Applicability
Caterpillar DPF	Many 1996-2008 model year engines; 175-600 hp, passive
Cleaire Horizon	Conditionally verified, active plug-in
DCL MINE-X Sootfilter	Conditionally verified for 1996-2008 model year, rubber tired
Engine Control System Combifilter	2007 or older, active plug-in
Engine Control Systems' PurifilterTM	Conditionally verified for many 1996-2008 model years, passive
HUSS Umwelttechnik FS_MK	Most engines through 2007 model year, active fuel-burner

Verified Devices - www.arb.ca.gov/diesel/verdev/verdev.htm

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VDECS Availability*



* Does not account for factors such as that some engines do not attain sufficient operating temperatures for passive VDECS.

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Slower Verifications than Expected

- Challenging to find the proper vehicles and engines for off-road demonstration programs to ensure the broadest verification possible for each system
- Difficult to accrue hours necessary for datalogging
- Some manufacturers have limited the resources invested in off-road verifications; focusing more on on-road systems
- Showcase has had a slower start than anticipated

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Proposed Modifications



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Extend Early PM Double Credit

- Extend the double credit for early PM retrofits deadline by 10 months from March 1, 2009 to January 1, 2010
- To guarantee double credit, fleets must have a purchase order by September 1, 2009
- Will allow more fleets to take advantage of this early credit provision

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Requirements for Fleet Size Changes

- Modify the changing fleet size requirements to not penalize fleets that change from small fleets to larger fleets, and then back to small fleet again
 - Previously, a fleet would have to continue meeting the larger fleet requirements for 2 yrs after shrinking back to small fleet
- Provision too complex if fleet constantly changes sizes
- Staff proposes a removal of this requirement; if fleet shrinks back to small, can immediately start complying with small fleet requirements

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Disclosure of Applicability Record Retention Requirements

- Clarify that all sellers, and not just dealers, of off-road vehicles must maintain records of the disclosure of regulation applicability
- Currently, regulation language says just dealers must maintain these records
- Proposal to change the language to state that all sellers must maintain the records

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Delay of Tier 1 Turnover

- Clarify the provision for delay of Tier 1 turnover
- Proposal to add language clarifying that Tier 1 vehicles are exempt from turnover only until the March 1, 2012, compliance deadline if requirements of the provision are met
- A fleet may have to begin turning over their Tier 1 vehicles after March 1, 2012 to meet the March 1, 2013 compliance requirements

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VDECS Reporting Requirements

- Clarify the reporting requirements for VDECS
- Previously, only reporting of VDECS model required
- Proposal to request reporting of both the VDECS serial number and VDECS family name instead of VDECS model
- Serial number is necessary for tracking purposes
- VDECS family name is necessary for determining if device was verified for engine at time of installation

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Economic Trends



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Trends Investigated

- Construction Indicators
 - Total value of construction
 - Construction employment
- Rental Industry Indicators
- Airline Industry GSE Indicators
- Overall Indicators
 - Off-road diesel fuel consumption

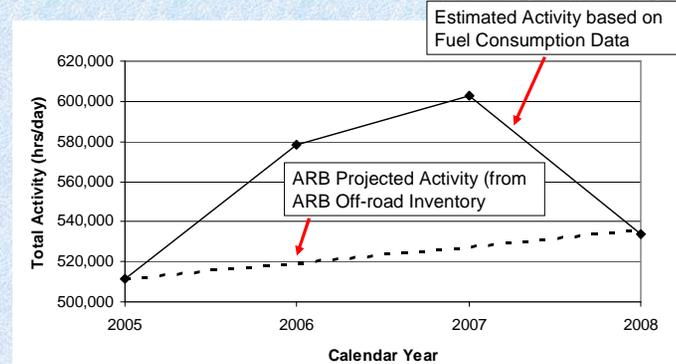
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Trends in Affected Industries

Economic Indicator	% Change from 2007
Total Value of Construction (using a 2008 forecasted value)	-12%
Construction Employment (using a 2008 forecasted value)	-8%
Construction and Industrial Equipment Rental Growth - Pacific Region (using a 2008 forecasted value)	-6.4%
CA Scheduled Aircraft Operations (comparing operations in 11/2008 to 11/2007)	-12%
Off-Road Diesel Fuel Consumption (2008 total based on extrapolating data from the first 3 quarters of 2008)	-11%

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Off-Road Activity



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More Information Requested

Information Requested by ARB staff:

- Vehicle turnover information
- Changes in purchasing practices
- Changes in hours of operation

Please send all information to:

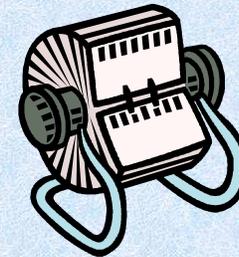
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ARB Website and Contacts



California Environmental Protection Agency
Air Resources Board



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Off-Road Contacts

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Diesel vehicle information hot line:

(866) 6-DIESEL
(866) 634-3735

Reporting hot line:

(877) 59-DOORS
(877) 593-6677

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Off-Road Regulation - www.arb.ca.gov/msprog/ordiesel/ordiesel.htm

Verified Devices - www.arb.ca.gov/diesel/verdev/verdev.htm

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