

Appendix H

Public Outreach and Implementation

PUBLIC OUTREACH AND IMPLEMENTATION

Appendix H discusses staff’s efforts to reach out to stakeholders regarding the proposed amendments, requirements and regulation implementation such as ARB’s enforcement activities and VDECS availability and feasibility.

A. Public Outreach

1. Proposed Amendments

In addition to the public workshops staff conducted on the proposed amendments, staff also contacted the companies and organizations listed in Table 1 regarding the proposed amendments.

Table 1: Companies and Organizations Contacted to Discuss the Truck and Bus Regulation

American Lung Association	Environmental Defense Fund
American Trucking Association	Foster Farms
Anderson Logging	Granite Construction
Associated California Loggers	Harris Ranch Beef Company
Bay Counties Dump Truck Association	J.G. Boswell Company
The Better World Group	Kings Canyon Unified School District
California Agricultural Aircraft Association	Lakepoint Unified School District
California Air Pollution Control Officers Association	Los Angeles Unified School District
California Association of Winegrape Growers	Lumber Association of California and Nevada
California Bus Association	Manufacturers of Emission Controls Association
California Cattlemen’s Association	Mid-Placer Transportation Agency
California Citrus Mutual	National Association of Fleet Administrators
California Cotton Ginners and Growers Association	Natural Resources Defense Council
California Farm Bureau Federation	Nisei Farmers League
California Association of School Transportation Officials	North American Power Sweeping Association
California Association of Winegrape Growers	Poway Unified School District
California Forestry Association	Robinson Enterprises
California Groundwater Association	School Bus Transportation Coalition
California Independent Oil Marketers Association	Southwestern Transportation Agency
California Rice Commission	Stanislaus County Farm Bureau
California Teamsters	United Motorcoach Association

California Trucking Association	Union of Concerned Scientists
Classic Charter	West Coast Collaborative
California Forestry Association	School Bus Transportation Coalition
California Groundwater Association	West County Transportation Agency
Coach USA	
Coalition for Clean Air	
Crop Production Services	.

2. Outreach Efforts

ARB staff, in cooperation with affected industries, has been developing and conducting an extensive outreach campaign to ensure affected parties are aware of their responsibilities under the regulation. This includes development of an outreach plan with input from industry representatives, distributing information through dealers and other state and local agencies, and conducting training seminars and presentations throughout the State.

Staff developed a comprehensive outreach plan to notify truck owners about in-use regulations that apply to them. The outreach plan will be modified to inform fleets about any changes and what options they have to comply. Education efforts include training seminars, public workshops, and individual meetings with affected stakeholders throughout the State and continuation of the successful TruckStop website and the toll free phone number, 866-6DIESEL. Outreach efforts also include traditional media efforts and utilizing e-mail listservs. California Truck'n News was developed to provide print ready materials for newsletters directed to those affected by the regulations. Staff will also continue to work with industry representatives and associations on additional ways to educate different stakeholders on the amendments to the regulations.

To assist in the successful implementation of the regulations, the Truck Regulations Advisory Committee (TRAC) was formed to facilitate communication with affected stakeholders and to obtain stakeholder feedback on the implementation of the regulations. TRAC helps staff fine tune outreach, training, implementation materials, proposed amendments, and provides a mechanism for stakeholders to discuss other implementation issues. Specific subcommittees were also formed to address issues that affect outreach, small businesses, reporting, and specific source category implementation issues. TRAC has held four meetings. All of the meetings have been held in Sacramento and have been webcast with the opportunity to comment via email, to provide flexibility to stakeholders. The meetings were held on September 1, 2009, November 10, 2009, February 17, 2010, and July 14-15, 2010. The next meeting is set for January 2011.

ARB continues to work with TRAC to identify the best approaches to outreach and how to best reach different stakeholder groups and to seeks members input on the implementation of the regulations and on the development of outreach and compliance materials, including fact sheets, posters, and flyers.

ARB staff established informational networks used by vehicle and equipment dealers, local air districts, and state agencies such as the Department of Motor Vehicles and the California Highway Patrol to distribute informational materials about the regulations. For example, information on all ARB truck regulations is included in the DMV Commercial Drivers Handbook and local districts and vehicle and equipment dealers are provided with up-to-date materials to educate those affected by the regulations.

Since the beginning of 2009, staff has provided training and presentations on the truck regulation requirements at over 200 events as described in Table 2. This outreach provided a range of information, from a general overview of the requirements to focused compliance options and reporting requirements. ARB staff will continue these outreach efforts statewide. Besides in person and via webcast, ARB staff has also offered training sessions using a webinar program (GoToMeeting). GoToMeeting allows ARB to host an interactive training where participants can attend online from remote locations at a date and time of their convenience. The most recent GoToMeeting training ARB staff offered was to vehicle and equipment sellers who were not able to attend the trainings held on July 21 and July 22, 2010. Staff held five training webinars and received positive feedback from participants. Staff plans to continue to offer training through the webinar program. ARB also provides on going classroom training through ARB's Compliance Training 500 Series courses for more established programs such as Course 511: Diesel Emissions and Controls, Course 512: In-Use Diesel Engine Regulations Overview, and Course 513: Drayage Truck .

Table 2: Public Outreach Events

Date	Location	Event
2/11/2009	Tulare	World Ag Expo
2/14/2009	Anderson	Sierra Logging Conference
2/17/2009	Phone Conference	ED BAAQMD
2/18/2009	Sacramento	CA Groundwater Association
3/3/2009	Salinas	Monterey Ag Expo
3/10/2009	Pleasant Grove	CAT Customer Outreach
3/11/2009	West Sacramento	CAT Customer Outreach
3/12/2009	Stockton	CAT Customer Outreach
3/16/09-3/18/09	Los Angeles	Clean Heavy Duty Vehicle Expo
3/18/2009	Diamond Bar	VIP and Diesel Outreach
3/18/2009	San Diego	CAT Customer Outreach
3/19/2009	Sacramento	VIP and Diesel Outreach
3/23/2009	Fresno	VIP and Diesel Outreach
3/23/2009-3/24/2009	Long Beach	Faster Freight Cleaner Air
3/25/2009	Sacramento	Lumber Association of CA and NV
3/25/2009	Sacramento	Environmental Policy Committee
4/1/2009	Oakland	TEC Equipment, Inc. Customer Outreach
4/9/2009	Ontario	Transportation Logistics Summit
4/16/2009	Riverside	CA Groundwater Association
4/23/2009	Stockton	CA Trucking Association Quarterly Chapter Meeting
5/5/2009	San Leandro	CAT Customer Outreach
5/8/2009	Redding	CAT Customer Outreach

Date	Location	Event
5/13/2009	Fresno	CAT Customer Outreach
5/13/2009	Fresno	Sequoia Equipment/ Harris Construction
5/14/2009	San Luis Obispo	District Outreach
5/14/2009-5/15/2009	Stockton	Western Truck Center
5/15/2009	Sacramento	Motor Carrier Industry Meeting
5/20/2009	City of Industry	CAT Customer Outreach
5/21/2009	Fremont	Bay Counties Dump Truck Association
5/22/2009	Sonora	Diesel Vehicle Workshop
6/1/2009	Davis	Green Acres, Blue Skies II
6/4/2009	San Leandro	NorCal Kenworth
6/23/2009	San Diego	CA Independent Oil Marketers Association Annual Meeting
6/30/2009	El Monte	Ontario Trucking Association
7/8/2009-7/10/2009	La Jolla	Truckload Carriers Association
7/14/2009	French Camp	CA Trucking Association Steering Meeting
7/16/2009	Lodi	Municipality, Utility and Fleet Training
7/16/2009	Sacramento	Clean Technologies Forum
7/16/2009	Fontana	Rush Truck Center
7/25/2009-7/27/2009	Las Vegas	The Great West Truck Show
7/29/2009	Irvine	GE Capital Fleet Services
7/30/2009	San Diego	Engineering and General Contractors Association
7/30-31/2009	Lowell, AR	J.B. Hunt
8/20/2009	Dallas, TX	The Great American Trucking Show
8/22/2009	Santa Rosa	Opperman & Sons
8/25/2009		Malloy Imrie & Vasconi Insurance, LLC
8/28/2009	Sacramento	Tiechert Truck Appreciation
9/2/2009	Sacramento	CA Trucking Association Sacramento Unit
9/3/2009	Sacramento	In-Use Diesel Engine Regulations Overview: Course #512
9/10/2009	Sacramento	In-Use Diesel Engine Regulations Overview: Course #512
9/15/2009	Nationwide	Technology and Maintenance Council with Dave Nemo- Radio Show
9/16/2009	Raleigh, NC	American Trucking Association Technology and Maintenance Council
9/17/2009	San Francisco	In-Use Diesel Engine Regulations Overview: Course #512
9/21/2009	Elk Grove	FedEx
9/22/2009	Newark	FedEx
9/22/2009	Bakersfield	In-Use Diesel Engine Regulations Overview: Course #512
9/23/2009	Vallejo	FedEx
9/23/2009	Fresno	In-Use Diesel Engine Regulations Overview: Course #512
9/24/2009	Elk Grove	FedEx
9/28/2009	Ontario	FedEx
9/29/2009	Lancaster	In-Use Diesel Engine Regulations Overview: Course #512
9/29/2009	Glendale	FedEx
9/29/2009	Ontario	FedEx
9/30/2009	Riverside	Valley Power Systems

Date	Location	Event
9/30/2009	Victorville	In-Use Diesel Engine Regulations Overview: Course #512
9/30/2009	San Diego	FedEx
10/1/2009	Long Beach	FedEx
10/7/2009	Jackson	In-Use Diesel Engine Regulations Overview: Course #512
10/8/2009	Healdsburg	Opperman & Sons
10/8/2009	Salinas	Pacific Truck Parts
10/12/2009	Stockton	Cargill Incorporated
10/12/2009	San Luis Obispo	In-Use Diesel Engine Regulations Overview: Course #512
10/13/2009	Oxnard	In-Use Diesel Engine Regulations Overview: Course #512
10/15/2009	Livermore	CA Tow Truck Association
10/15/2009	Squaw Valley	CA Construction and Industrial Materials Association
10/17/2009-10/18/2009	Pomona	Truck Show Latino
10/20/2009	Diamond Bar	In-Use Diesel Engine Regulations Overview: Course #512
10/21/2009	Portland	Oregon Trucking Association
10/21/2009	Ord Bend	CA Bee Breeders Association
10/22/2009	Orange County	In-Use Diesel Engine Regulations Overview: Course #512
10/26/2009	Auburn	In-Use Diesel Engine Regulations Overview: Course #512
10/27/2009	Modesto	California Moving and Storage Association
11/3/2009	Los Angeles	Armored Car Association
11/3/2009	Carlsbad	CA Bus Association Annual Convention
11/3/2009	Sacramento	In-Use Diesel Engine Regulations Overview: Course #512
11/4/2009	Sacramento	In-Use Diesel Engine Regulations Overview: Course #512
11/4/2009	French Camp	Arrow Truck Sales Open House
11/4/2009	Ontario	CA Trucking Association Meeting
11/5/2009	French Camp	Arrow Truck Sales Open House
11/5/2009	Sacramento	CA Trucking Association Meeting
11/7/2009	Reno, NV	CA Groundwater Association Air Emissions
11/10/2009	Santa Rosa	In-Use Diesel Engine Regulations Overview: Course #512
11/12/2009	Tracy	J.B. Hunt-C.A.R.B. Seminar
11/13/2009	Irvine	J.B. Hunt-C.A.R.B. Seminar
11/13/2009	Portland, OR	Oregon Trucking Association Maintenance Fair
11/15-17/2009	Anaheim	Intermodal Expo
11/17/2009	Riverside	California Moving and Storage Association
11/18/2009	Knightsen	Contra Costa County Dept. of Agriculture
11/18/2009	Sacramento	School Transportation Meeting
11/19/2009	Anaheim	Fleet Services Inc. Fleet Training
12/3/2009	Sacramento	In-Use Diesel Engine Regulations Overview: Course #512
12/2-4/2009	Dallas, TX	Supply Chain and Logistics Summit
12/4/2009	Santa Maria	California Moving and Storage Association

Date	Location	Event
12/7/2009	Anaheim	CA Farm Bureau Annual Meeting
12/7-10/2009	Sacramento	CA Agricultural Commissioners and Sealers Association
12/8/2009	Knightsen	Contra Costa County Dept. of Ag
12/16/2009	San Francisco	Motorcoach Operators
12/17/2009	Fresno	Central Valley Bee Keepers Association
12/17/2009	Otay Mesa	San Diego Association of Governments
12/17/2009	Sacramento	Ryder Tractor Trailer GHG Training
1/5/2010	Sacramento	Hybrid Truck and Bus Voucher Incentive Program Dealer Training
1/6/2010	Commerce	Bullet Freight
1/6/2010	San Francisco	Hybrid Truck and Bus Voucher Incentive Program Dealer Training
1/13/2010	Bay Area	Diesel Emissions and Controls: Course #511
1/13/2010	Fresno	Hybrid Truck and Bus Voucher Incentive Program Dealer Training
1/14/2010	Medford, OR	Southern Maintenance Council
1/21/2010	Diamond Bar	In-Use Diesel Engine Regulations Overview: Course #512
1/21/2010	Yuba City	Yuba Sutter Farm Bureau
1/22/2010	Pacoima	In-Use Diesel Engine Regulations Overview: Course #512
1/26/2010	San Francisco	Green Airport Fleets Workshop and Expo
1/27/2010	Sacramento	Diesel Emissions and Controls: Course #511
2/2/2010	San Diego	Diesel Emissions and Controls: Course #511
2/3/2010	Sacramento	Hybrid Truck and Bus Regulation and Test Procedure Workshop
2/3/2010	San Diego	Diesel Emissions and Controls: Course #511
2/8/2010	Auburn	Placer County Department of Agriculture
2/9/2010	Imperial	In-Use Diesel Engine Regulations Overview: Course #512
2/10/2010	Tulare	World Ag Expo
2/10/2010	San Diego	In-Use Diesel Engine Regulations Overview: Course #512
2/11-13/2010	Redding	Cascade Sierra Logging Conference
2/16/2010	Diamond Bar	Westrux International Safety Conference
2/17/2010	Redding	Diesel Emissions and Controls: Course #511
2/17/2010	Sacramento	Drayage Truck: Course #513
2/18/2010	Sacramento/webcast	In-Use Diesel Engine Regulations Overview: Course #512
2/21/2010	Florida	Retail Industry Leaders Association Logistics
2/24/2010	El Monte	Truck and Bus/GHG Reporting Training
2/24/2010	Santa Barbara	CA Trucking Association
2/25/2010	Fresno	Truck and Bus/GHG Reporting Training
2/25/2010	Fresno	Truck and Bus/GHG Reporting Training
3/1/2010	San Andreas	Truck and Bus/GHG Reporting Training
3/2/2010	Santa Barbara	Diesel Emissions and Controls: Course #511
3/2/2010	Sacramento	Truck and Bus/GHG Reporting Training
3/3/2010	Sacramento	Truck and Bus/GHG Reporting Training
3/3/2010	Corona, Diamond Bar	In-Use Diesel Engine Regulation Overview: Course #512

Date	Location	Event
3/4/2010	Riverside	Truck and Bus/GHG Reporting Training
3/8/2010	Monterey	Truck and Bus/GHG Reporting Training
3/10/2010	Modesto	Western United Dairymen
3/10/2010	Calexico	CA Highway Patrol Industry Days
3/11/2010	Napa	Truck and Bus/GHG Reporting Training
3/13-15/2010	Monterey	CA Association of School Transportation Officials 2010 42 nd Annual State Conference
3/15/2010	El Centro	Truck and Bus/GHG Reporting Training
3/16/2010	San Diego	Truck and Bus/GHG Reporting Training
3/17/2010	Diamond Bar	Diesel Emissions and Controls: Course #511
3/17/2010	Webinar	Missouri Trucking Association
3/17/2010	Webinar	Washington Trucking Association
3/18/2010	Sacramento	Truck and Bus/GHG Reporting Training
3/18/2010	Sacramento	Truck and Bus/GHG Reporting Training
3/22/2010	Santa Rosa	Sonoma County Farm Bureau
3/22/2010	Marysville	Truck and Bus/GHG Reporting Training
3/23/2010	San Diego	Drayage Truck: Course #513
3/23/2010	Colusa	Truck and Bus/GHG Reporting Training
3/24/2010	Ventura	Truck and Bus/GHG Reporting Seminar
3/24/2010	Long Beach	Drayage Truck: Course #513
3/24/2010	Oakland	CA Trucking Association/ NorCal Intermodal
3/25-27/2010	Ukiah	Redwood Logging Conference
3/25/2010	Bakersfield	Truck and Bus/GHG Reporting Training
3/25/2010	Tulare	Truck and Bus/GHG Reporting Training
3/26/2010	Fresno	Truck and Bus/GHG Reporting Training
3/30/2010	Sacramento	Process Equipment Manufactures Association
3/31/2010	Sacramento	Safety Expo 2010
4/1/2010	Sacramento	In-Use Diesel Engine Regulation Overview: Course #512
4/2/2010	Sacramento	In-Use Diesel Engine Regulation Overview: Course #512
4/6/2010	Fullerton	Rotary Club Meeting
4/6/2010	Sacramento	Diesel Emissions and Controls: Course #511
4/13/2010	Fresno	Diesel Emissions and Controls: Course #511
4/21/2010	Sacramento	CA Bus Association
4/21/2010	Sacramento (webcast)	Diesel Emissions and Controls: Course #511
4/22/2010	Sacramento (webcast)	Diesel Emissions and Controls: Course #511
4/22/2010	Otay Mesa	CA Highway Patrol Industry Days
4/27/2010		National Association of Clean Air Agencies
4/27/2010	Riverside	Western Riverside Council of Governments Advancing the Choice
4/28/2010	Fontana	Inland Kenworth/ Engine Control Systems
4/29/2010	Montebello	Inland Kenworth/ Engine Control Systems
4/29/2010	Redding	In-Use Diesel Engine Regulation Overview: Course #512
4/30/2010	Eureka	In-Use Diesel Engine Regulation Overview: Course #512
5/5/2010	Bakersfield	Diesel Emissions and Controls: Course #511
5/5/2010	Napa	CA Precast Concrete Association
5/11/2010	Bay Area	In-Use Diesel Engine Regulation Overview: Course #512

Date	Location	Event
5/12/2010	North Bay Area	In-Use Diesel Engine Regulation Overview: Course #512
5/18/2010	Webcast	In-Use Diesel Engine Regulation Overview: Course #512
5/19/2010	Sacramento (webcast)	In-Use Diesel Engine Regulation Overview: Course #512
5/26/2010	Oakland	Diesel Emissions and Controls: Course #511
5/26/2010	Ventura	Drayage Truck: Course #513
5/27/2010	Tecate	CA Highway Patrol Industry Days
5/27-29/2010	Pleasanton	National Convention and Antique Truck Show
6/4-5/2010	Galt	Shriner's Cool Truck Show
6/16/2010	Los Angeles	Diesel Emissions and Controls: Course #511
6/17/2010	San Jose	Coast Counties Peterbilt
6/30/2010	Salinas	Diesel Emissions and Controls: Course #511
7/13/2010	Santa Barbara	In-Use Diesel Engine Regulation Overview: Course #512
7/14/2010	San Luis Obispo	In-Use Diesel Engine Regulation Overview: Course #512
7/20/2010	Santa Maria	In-Use Diesel Engine Regulation Overview: Course #512
7/20/2010	Pomona	California Fleet Solutions
7/21/2010	Santa Maria	Diesel Emissions and Controls: Course #511
7/21/2010	El Monte	Dealer Training
7/22/2010	Sacramento (webcast)	Dealer Training
7/26/2010	GoToMeeting	Peterbilt Dealer Training
7/27/2010	Sacramento	Drayage Truck: Course #513
7/28/2010	Sacramento (webcast)	In-Use Diesel Engine Regulation Overview: Course #512
7/30/2010	GoToMeeting	Northwest Equipment Dealer Training
7/31/2010	Clovis	Central Valley Commercial Truck Show
8/2/2010	GoToMeeting	Meinhiem Dealer Training
8/16/2010	GoToMeeting	MidWest Utility
8/17-18/2010	San Diego	Diesel Emissions and Controls: Course #511
8/19/2010	Sacramento	Diesel Emissions and Controls: Course #511
8/19/2010	GoToMeeting	Future Ford Dealer Training
8/23/2010	Sunol	CA Highway Patrol Driver Appreciation Day
9/19/2010	Anaheim	California Vehicle Safety Summit
9/21&22/2010	GoToMeeting	Ford Commercial Account Managers Dealer Training
9/22/2010	San Diego	CA Construction and Industrial Materials Association
9/28/2010	Cottonwood	CA Highway Patrol Driver Appreciation Day
10/9/2010	San Francisco	National Truck and Heavy Equipment Claims Council
10/13/2010	Nevada City	Gold Country Chapter of Associated Loggers
10/16-17/2010	Pomona	Golden State (Latino)Truck Show

3. Other Efforts

To facilitate stakeholder access to regulatory information, ARB established a toll free hotline and a consolidated website to access information that affects truckers. Since its inception, ARB's toll free number, 866-6DIESEL, has assisted over 25,000 callers with

questions on the truck and bus regulation and other diesel vehicle regulations. The TruckStop website streamlines access to information affecting diesel trucks and trailers. Since January 8, 2010, there have been over 47,000 hits on the truck and bus regulation website and over 236,000 hits combined on all of the diesel program websites.

B. Enforcement

Enforcement of the regulation will be conducted similarly to the enforcement of ARB's in-use fleet rules. Staff will use the inspection and audit methods they have developed during their many years of experience enforcing the Heavy-Duty Vehicle Inspection Program (adopted into law in 1988) and the Periodic Smoke Inspection Program (adopted into law in 1990). Enforcement activities will include inspections at border crossings, CHP weigh stations, fleet facilities, and randomly selected roadside locations, and audits of records. These activities could result in corrective actions and substantial civil penalties for non-compliance with the regulation. The 2009 Annual Enforcement Report summarizes their enforcement activities and can be found at <http://www.arb.ca.gov/enf/reports/reports.htm>.

The proposed amendments to the regulation will not have an impact on the enforcement policies of ARB. It is ARB's policy to ensure uniform compliance with all its regulations so that no one entity obtains an unfair economic advantage by not complying with applicable regulatory requirements. For the regulation to be fair to fleets that would spend considerable funds and effort to comply, fleets must be assured that their competitors are held accountable for compliance. Staff recognizes that creating a level playing field for all affected fleets is important, and is committed to obtaining the resources necessary to provide outreach, compliance assistance, and enforce the regulation.

C. VDECS Availability and Feasibility

1. Technology Available to Meet Regulatory Requirements

This section discusses the availability of technology to meet the requirements of the proposed amendments to the regulation, with a particular focus on retrofit strategies and their feasibility.

a) Verification

The regulation only provides credit for diesel emission control strategies that have been verified by ARB. ARB adopted a procedure to verify retrofit diesel emission control strategies in 2003 with updates approved by the Board in 2008 (ARB, 2009).

Verification is an approval from ARB, which tells end users that the verified device achieves the advertised emission reductions and is durable. To be verified, retrofit devices must demonstrate the efficacy and durability of their products and provide a warranty. The warranty guarantees the retrofit's efficacy for 5 years or up to 150,000 miles or more, depending on engine size and age, and warrants that the retrofit will not cause engine damage.

ARB's verification procedure is a multi-level verification system consisting of three PM reduction Levels and optional NOx reduction levels (see Table 3). Reductions in NOx are not required for verification, but ARB's procedure recognizes and verifies NOx reductions that are greater than or equal to 25 percent in 15 percent increments. This system has broadened both the spectrum of control technologies available to participate in California's diesel emission control effort and the number and types of vehicles and engines that can be controlled. This multi-level approach to verification is consistent with the goal of achieving the maximum reductions in diesel PM emissions that are economically and technologically feasible. At this time, nearly all the verified emissions control strategies are retrofit exhaust after treatment devices.

Table 3: VDECS Levels (as adopted by the Board in January 2008)

Pollutant	Reduction	Classification
PM	< 25%	Not verified
	≥ 25%	Level 1
	≥ 50%	Level 2
	≥ 85%, or ≤ 0.01g/bhp-hr	Level 3
NOx	< 25%	Not verified
	≥ 25%	Mark 1
	≥ 40%	Mark 2
	≥ 55%	Mark 3
	≥ 70%	Mark 4
	≥ 85%	Mark 5

b) Regulatory Requirements

The Truck and Bus regulation requires PM BACT. PM BACT is defined as an engine equipped with the highest level VDECS for PM or an engine originally equipped with a diesel particulate filter and certified to meet the 0.01 g/bhp-hr certification standard.

A typical Level 3 DECS consists of a ceramic wall-flow monolith or a silicon carbide substrate that captures PM before it can be released to the atmosphere. The accumulated soot is then burned off (regenerated) either through an active or passive process. In passively regenerated diesel particulate filters, the substrate is coated with a catalyst that burns off the collected PM during "regeneration." In actively regenerated diesel particulate filters, an external source of heat such as an electrical heater or fuel burner is used to oxidize the collected PM. Vehicles with 2007 MY engines are already equipped with PM filters. Currently, the only technology that achieves the required NOx performance standard is a 2010 model year engine.

c) Devices Verified for On-Road Vehicles

There are currently 14 Level 3 PM retrofit devices for on-road use that have been verified by ARB. Of these, two Level 3 PM devices also provide verified NOx

reductions. More information about VDECS, and applicable engine families, is available at <http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm>.

d) Devices Funded by Various Programs

Air districts reported to ARB by the June 28, 2010 deadline and made available the data on all 11,985 engines that were retrofit from 2007 to 2010. There were 1,142 on-road retrofits funded through the Carl Moyer Program; 739 retrofits funded through the Low Emission School Bus Program; 2,011 retrofits funded for drayage trucks; 5,508 retrofits funded for solid waste collection vehicles; and 2,585 retrofits funded through the Transit Bus Program. In addition, 86 school buses have been retrofit using Diesel Emission Reduction Act funds and 1,000 Level 3 retrofits have been funded by the Goods Movement Emission Reduction Program.

2. Feasibility

Several fleets have informed staff that they have concerns regarding VDECS. These concerns include:

- Availability for short haul/low mileage vehicles
- Availability for older engines
- Technical feasibility with newer engines

As reported in Chapter VII of the Technical Support Document (ARB, 2008) hundreds of thousands of diesel PM filters have been installed successfully on trucks and buses throughout the world, both in new vehicles and in numerous on-road retrofit applications. Most medium-heavy and heavy-heavy duty diesel engines produced since 2007 have been equipped by the manufacturer with PM filters. In California, thousands of VDECS have been funded through the Carl Moyer program, and have been installed in response to existing regulations targeting urban buses, transit fleet vehicles, solid waste collection vehicles, vehicles owned by public agencies, drayage trucks, off-road vehicles, and others. Over 5,500 solid waste collection vehicles and over 2,500 transit fleet vehicles already have VDECS installed on them. VDECS can be designed, installed, and operated to provide effective, reliable, and durable performance for most engines. If a VDECS is not technically feasible for the vehicle, the regulation allows a compliance extension until 2018.

ARB has verified 9 passive and 5 active Level 3 VDECS for on-road vehicles. In short haul and low speed applications, a passive VDECS may not be a suitable choice because of the temperature requirements to burn off the trapped diesel PM (regeneration). However, an active VDECS can be used, which regenerates with a separate power unit to heat up the exhaust system to reach the required temperature. This can be done when the vehicle is moving or parked after the shift. Currently, three devices (HUSS, ECS Purifilter, and Cleaire Horizon) have been verified to work on a wide variety of model engines including pre-1994 mechanical fuel injected engines. Almost all vehicles with 2007 and newer engines are already equipped with PM filters

and are under the manufacturer's warranty. The American Trucking Association's transport topic magazine cites positive results for the 2007 systems. (ATA, 2008)

ARB's verification program is designed to evaluate the effectiveness of a retrofit device to reduce PM and/or NOx emissions from specific diesel engines. As part of that evaluation, the compatibility of the device with the engine is considered through testing that includes durability testing on operating vehicles. The device manufacturer must also demonstrate that the emission control device does not damage the engine and does not hinder the vehicle's ability to perform its normal functions. Also, the device manufacturer is required to provide a warranty against engine damage caused by the VDECS. The warranty requirements for on-road VDECS are summarized in Table VII-5 of the Technical Support Document (ARB, 2008). The verification process in conjunction with the required warranty provides the fleet owner with confidence that a verified device will perform as advertised and, in the event that a VDECS malfunctions, they have recourse through the warranty. The most current list of VDECS, applicable engine families, as well as EO letters may be found on the ARB website at: <http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm>.

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