Appendix A

Proposed Regulatory Language

PROPOSED REGULATION FOR IN-USE OFF-ROAD DIESEL VEHICLES

Adopt new section 2449, in title 13, article 4.8, chapter 9, California Code of Regulations (CCR) to read as follows:

(Note: The entire text of article 4.8, section 2499 is new language.):

Article 4.8 In-Use Off-Road Diesel-Fueled Fleets

Section 2449 Emission Standards for In-Use Off-Road Diesel-Fueled Fleets

(a) **Purpose**

The purpose of this regulation is to reduce diesel particulate matter (PM) and criteria pollutant emissions from in-use off-road diesel-fueled vehicles.

(b) **Applicability**

Except as provided in the paragraph below, the regulation applies to any person, business, or government agency who owns or operates within California any diesel-fueled off-road compression ignition vehicle engine with maximum power of 25 horsepower (hp) or greater that is used to provide motive power in a workover rig or to provide motive power in any other motor vehicle that (1) cannot be registered and driven safely on-road or was not designed to be driven on-road, and (2) is not an implement of husbandry or recreational off-highway vehicle. Vehicles that were designed to be driven on-road, have on-road engines, and still meet the original manufacturer's on-road engine emission certification standard are considered on-road and are specifically excluded from this regulation, even if they have been modified so that they cannot be registered and driven safely on-road. Off-road vehicles that were designed for off-road use and have off-road engines are considered off-road and are subject to this regulation, even if they have been modified so that they can be driven safely on-road.

This regulation also applies to any person who sells a vehicle with such an engine within California.

Persons who provide financing in the form of "finance leases," as defined in California Uniform Commercial Code Section 10103(a)(7), for in-use off-road diesel-fueled vehicles, do not "own" such vehicles for the purposes of this regulation.

Vehicles with engines subject to this regulation are used in construction, mining, rental, government, landscaping, recycling, landfilling, manufacturing, warehousing, ski industry, composting, airport ground support equipment, industrial, and other operations. The regulation does not cover locomotives, commercial marine vessels, marine engines, recreational vehicles, or combat and tactical support equipment. The

regulation also does not cover stationary or portable equipment, or equipment or vehicles used in agricultural operations, or equipment at ports or intermodal railyards. Off-road diesel vehicles owned and operated by an individual for personal, non-commercial, and non-governmental purposes are exempt from the provisions of this regulation.

(c) **Definitions**

(1) **Agricultural operations** means (1) the growing or harvesting of crops (including forest operations) or the raising of fowl or animals for the primary purpose of making a profit, providing a livelihood, or conducting agricultural research or instruction by an educational institution, or (2) agricultural crop preparation services such as packinghouses, cotton gins, nut hullers and processors, dehydrators, and feed and grain mills. Agricultural crop preparation services include only the first processing after harvest, not subsequent processing, canning, or other similar activities. For forest operations, agricultural crop preparation services include milling, peeling, producing particleboard and medium density fiberboard, and producing woody landscape materials.

(A) **Part-time agricultural use –** For purposes of this regulation, a vehicle that is used by its owner for both agricultural and nonagricultural operations is considered to be a vehicle engaged in agricultural operations, only if over half of its annual operating hours are for agricultural operations

(B) **Part-time agricultural use of rental vehicles** - A vehicle that is rented or leased by its owner for use in agricultural and nonagricultural operations by others, unless it is exclusively used for agricultural operations.

(2) **Airport ground support equipment** (GSE) is mobile diesel-fueled off-road compression ignition vehicles used to service and support aircraft operations. GSE vehicles perform a variety of functions, including but not limited to: aircraft maintenance, pushing or towing aircraft, transporting cargo to and from aircraft, loading cargo, and baggage handling. GSE vehicles include equipment types such as baggage tugs, belt loaders, and cargo loaders.

(3) **Alternative fuel** means natural gas, propane, ethanol, methanol, gasoline (when used in hybrid electric vehicles only), hydrogen, electricity, fuel cells, or advanced technologies that do not rely on diesel fuel. “Alternative fuel” also means any of these fuels used in combination with each other or in combination with other non-diesel fuels.

(4) **Best Available Control Technology** (BACT) means the exhaust retrofit and accelerated turnover requirements in section 2449(d)(2).

(5) **Captive Attainment Area Fleet** means a fleet, regardless of size, in which all of its vehicles operate exclusively only in the following counties: Alpine, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Monterey,

Plumas, San Benito, San Luis Obispo, Santa Cruz, Shasta, Sierra, Siskiyou, Trinity, Tehama, and Yuba. Fleets that operate one or more vehicles outside the counties listed above may not be defined as captive attainment area fleets.

(6) **Carryover retrofit credit**, as calculated under section 2449(d)(2)(B)2., means a way of tracking retrofits accomplished in excess of those required by the BACT retrofit requirements. Fleets may take credit for such excess retrofits in earlier years in order to do less retrofitting in later years.

(7) **Carryover turnover credit**, as calculated under section 2449(d)(2)(A)2., means a way of tracking turnover accomplished in excess of the BACT turnover requirements. Fleets may take credit for such excess turnover in earlier years to do less turnover in later years.

(8) **Combat and Tactical Support Equipment** means equipment that meets military specifications, is owned by the U.S. Department of Defense and/or the U.S. military services or its allies, and is used in combat, combat support, combat service support, tactical or relief operations or training for such operations.

(9) **Common ownership or control** means being owned or managed day to day by the same person, corporation, partnership, or association. Vehicles managed by the same directors, officers, or managers, or by corporations controlled by the same majority stakeholders are considered to be under common ownership or control even if their title is held by different business entities.

(10) **Dedicated Snow Removal Vehicle** means a vehicle that is operated exclusively to remove snow from public roads, private roads, or other paths from which snow must be cleared to allow on-road vehicle access. Dedicated snow removal vehicles must have permanently affixed snow removal equipment such as a snow blower or auger and may include, but are not limited to, motor graders, loaders, and snow blowers.

(11) **Diesel particulate matter (diesel PM)** means the particles found in the exhaust of diesel-fueled compression ignition engines. Diesel PM may agglomerate and adsorb other species to form structures of complex physical and chemical properties. The Air Resources Board (ARB) has identified diesel PM as a toxic air contaminant.

(12) **Diesel PM Index** means an indicator of a fleet's overall diesel PM emission rate. The diesel PM Index for a specific fleet is determined by summing the product of the maximum power of each engine times the diesel PM Emission Factor, and dividing by the fleet's total maximum power.

(13) **Diesel PM Target Rate** means the fleet average that a specific fleet must meet in a compliance year in order to show compliance with the fleet average requirements. The Diesel PM Target Rate varies depending on a fleet's horsepower distribution. The Diesel PM Target Rate for a specific fleet for each compliance year is determined by summing (adding) the product of the maximum power of each engine times the Diesel PM target, and dividing the resulting sum by the fleet's total maximum power.

(14) **Emergency operation** means helping alleviate an immediate threat to public health or safety. Examples of emergency operation include repairing or preventing damage to roads, buildings, terrain, and infrastructure as a result of an earthquake, flood, storm, fire, terrorism, or other infrequent act of nature. Routine maintenance or construction to prevent public health risks does not constitute emergency operation.

(15) **Emission Factor** means diesel PM or oxides of nitrogen (NOx) emission rate in grams per brake-horsepower hour (g/bhp-hr) as shown in Attachment A, unless the engine is a Post-2007 Flexibility Engine (see definition).

(A) Engines certified to Family Emission Limits and flexibility engines certified before January 1, 2007 should still use the emission factors in Attachment A.

(B) If the model year is unknown, the emission factor is the emission factor shown in Attachment A for 1900-1969 model years.

(C) For engines that have been retrofit with VDECS, the PM Emission Factor is reduced 50 percent for a Level 2 VDECS, and 85 percent for a Level 3 VDECS; the NOx Emission Factor is reduced by the percentage NOx emission reductions that are verified, if any. The PM Emission Factor is not reduced for a Level 1 VDECS.

(16) **Equipment Identification Number** means a unique identification number assigned by ARB to each vehicle in an owner's fleet subject to this regulation. All reporting and recordkeeping will link vehicle data with this number.

(17) **Executive Officer** means the Executive Officer of the ARB or his or her authorized representative.

(18) **Family Emission Limit (FEL)** means an emission level that is declared by the manufacturer to serve in lieu of an emission standard for certification purposes and for the averaging, banking, and trading program, as defined in title 13, California Code of Regulations, section 2423.

(19) **Fleet** means all off-road vehicles and engines owned by a person, business, or government agency that are operated within California and are subject to the regulation. A fleet includes one or more vehicles. A fleet does not include vehicles that have never operated in California.

(A) **Rental Fleets** - Vehicles that are owned by a rental company and that are leased by the same lessee for a period of one year or more may be excluded from the rental company fleet and included in the fleet of the lessee only if such arrangement is delineated in the written lease agreement. Vehicles that are rented or leased for a period of less than one year must be included in the fleet of the rental company. Off-road vehicles and engines owned by a lessor and leased to a lessee under a "lease" as defined in California Uniform Commercial Code Section 10103(a)(10), of a duration of at least one year, dated prior to the effective date of these regulations, are considered part of the fleet of the lessee rather than the lessor.

(20) **Fleet Size Category-** Fleets are classified by size as described below. A fleet must meet large fleet requirements if the total vehicles under common ownership or control would be defined as a large fleet. A fleet must meet medium fleet requirements if the total vehicles under common ownership or control would be defined as a medium fleet. Individual federal or state agencies may report their vehicles separately, but all vehicles owned by agencies of the United States or the State of California agencies must meet the large fleet requirements. Low-use vehicles, dedicated snow-removal vehicles, and vehicles used solely for emergency operations need not be included in the total maximum power used to classify fleets by size.

(A) **Large Fleet** – A fleet with a total maximum power (as defined below) greater than 5,000 horsepower (hp). A fleet must meet large fleet requirements if the total vehicles under common ownership or control would be defined as a large fleet. All fleets owned by the United States, the State of California, or agencies thereof (i.e., an agency in the judicial, legislative, or executive branch of the federal or state government) will be considered as a unit whole and must meet the large fleet requirements set forth in section 2449(d)(1), *infra*.

(B) **Medium Fleet** – A fleet that is not a small nor large fleet.

(C) **Small Fleet** – A fleet with total maximum power of less than or equal to 1,500 hp that is owned by a small business or less than or equal to 1,500 hp that is owned by a local municipality, or a local municipality fleet in a low population county irrespective of total maximum power.

(21) **Forest operations** means cutting or removal or both of timber, other solid wood products, including Christmas trees, and biomass from forestlands for commercial purposes, together with all the work incidental thereto, including but not limited to, construction and maintenance of roads, fuel breaks, firebreaks, stream crossings, landings, skid trails, beds for falling trees, fire hazard abatement, and site preparation that involves disturbance of soil or burning of vegetation following forest removal activities. Forest operations include the cutting or removal of trees, tops, limbs and or brush which is processed into lumber and other wood products, and or for landscaping materials, or biomass for electrical power generation. Forest operations do not include conversion of forestlands to other land uses such as residential or commercial developments.

(22) **Highest Level Verified Diesel Emission Control System (VDECS)** means the highest level VDECS verified by ARB under its *Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emission from Diesel Engines* (*Verification Procedure*), title 13, California Code of Regulations (CCR), sections 2700-2710, for a specific engine as of 10 months prior to the compliance date, which (1) can be used without impairing the safe operation of the vehicle as demonstrated per section 2449(e)(8), and (2) the diesel emission-control strategy manufacturer and authorized diesel emission-control strategy dealer agree can be used on a specific engine and vehicle combination without jeopardizing the original engine warranty in effect at the time of application.

Plus designations do not matter; that is, a Level 3 Plus is the same diesel PM level as Level 3; and Level 2 Plus is the same diesel PM level as Level 2.

The highest level VDECS is determined solely based on verified diesel PM reductions, not based on verified NOx reductions. All Level 3 diesel PM devices are higher than all Level 2 diesel PM devices. Level 1 devices are never considered highest level VDECS for the purpose of this regulation.

(23) **Implement of husbandry** is as defined in California Vehicle Code (VC) Division 16.

(24) **Local Municipality** means a city, county, city and county, special district, or other public agency, or two or more public entities acting jointly, or the duly constituted body of an Indian reservation or rancheria. Agencies of the United States of America or the State of California, and departments, divisions, public corporations, or public agencies of this State or of the United States are not considered local municipalities.

(25) **Low-Population County Local Municipality Fleet** means a fleet owned by a local municipality (as defined above) that is located in a county as defined in title 13, CCR, section 2022(b)(2) and identified in section 2022(c)(2), Table 2, or, using the criteria set forth in title 13, CCR, section 2022.1(c)(4), a local municipality not located in a low-population county that has requested and has received Executive Officer approval to be treated like a municipality in a low-population county. Fleets owned by such local municipalities shall be treated as small fleets even if their total maximum power exceeds 1,500 horsepower.

(26) **Low-use vehicle** means a vehicle that operated in California less than 100 hours during the preceding 12-month period running from March 1 to end of February. For example, when reporting in 2009, the hours of use between March 1, 2008 and February 28, 2009 would be used to determine low-use status. To be considered a low-use vehicle, the fleet owner must submit engine operation data from a functioning non-resettable hour meter.

(A) **Vehicles used outside California -** Vehicles that operate both inside and outside of California can meet the low-use vehicle definition if they are used less than 100 hours per year in California.
(B) **Three-year rolling average** - A vehicle operated only in California for the previous three years and owned by the same owner during that period will be considered low-use if it operated on average less than 100 hours per year during that previous three-year period.
(C) **Emergency operation hours** - Hours used for emergency operations are not counted when determining low-use status.

(27) **Maximum power** (Max Hp) means the engine's net horsepower or net flywheel power certified to Society of Automotive Engineers (SAE) Method J1349. If the engine's net horsepower or net flywheel power certified to SAE Method J1349 is not available, another net horsepower or net flywheel power from the manufacturer's sales and service literature may be used.

(28) **Motor vehicle** has the same meaning as defined in VC Section 415.

(29) **New fleet** means a fleet that is acquired or that enters California after March 1, 2009. Such fleets may include new businesses or out-of-state businesses that bring vehicles into California for the first time after March 1, 2009.

(30) **NOx index** means an indicator of a fleet's overall NOx emission rate. The NOx Index for a specific fleet is determined by summing the product of the maximum power of each engine times the NOx Emission Factor, and dividing by the fleet's total maximum power.

(31) **NOx target rate** means the NOx fleet average that a specific fleet must meet in a compliance year in order to show compliance with the fleet average requirements. The NOx Target Rate varies depending on a fleet's horsepower distribution. The NOx Target Rate for a specific fleet for each compliance year is determined by summing (adding) the product of the maximum power (Max Hp) of each engine times the NOx target, and dividing the resulting sum by the fleet's total maximum power.

(32) **Off-highway vehicle** is defined in VC Division 16.5.

(33) **Oxides of nitrogen (NOx)** means compounds of nitric oxide, nitrogen dioxide, and other oxides of nitrogen. Nitrogen oxides are typically created during combustion processes and are major contributors to smog formation and acid deposition.

(34) **Post-2007 Flexibility Engine** means an engine certified on or after January 1, 2007 to the implementation flexibility standards in title 13, CCR, section 2423(d). Such flexibility engines are generally labeled as follows by the engine manufacturer:

"THIS ENGINE COMPLIES WITH CALIFORNIA EMISSION REQUIREMENTS UNDER 13 CCR 2423(d)…" or
"THIS ENGINE CONFORMS TO CALIFORNIA OFF-ROAD COMPRESSION-IGNITION ENGINE REGULATIONS UNDER 13 CCR 2423(d)."

Post-2007 flexibility engines should use the emission standard to which the engine is certified. For example, a Tier 4 engine flexed back to Tier 2 emission levels should use the Tier 2 PM standard as the emission factor (converted from grams per kilowatt hour (g/kW-hr) to g/bhp-hr by multiplying by 0.746).

(35) **Queuing** means the intermittent starting and stopping of a vehicle while the driver, in the normal course of doing business, is waiting to perform work or a service, and when shutting the vehicle engine off would impede the progress of the queue and is not practicable. Queuing does not include the time a driver may wait motionless in line in anticipation of the start of a workday or opening of a location where work or a service will be performed.

(36) **Registered and driven safely on-road** means a vehicle meets the requirements to be registered for on-road operation in VC Division 3, Chap. 1, Article 1, Sec. 4000 et seq. (i.e., required to be registered or could be registered), and the requirements to be driven safely on-road in “Equipment of Vehicles” requirements in VC Division 12, Chap. 1, Sections 24000 et seq. and “Size, Weight, and Load” requirements in VC Division 15, Sections 35000 et seq. Having a California Special Construction Equipment plate as defined in California Vehicle Code Section 565 and 570 does not constitute registration.

(37) **Repower** means to replace the engine in a vehicle with another engine meeting a subsequent engine emissions standard (e.g., replacing a Tier 0 engine with a Tier 2 or later engine).

(38) **Responsible Official** means one of the following:

(A) For a corporation: A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation,

(B) For a partnership or sole proprietorship: a general partner or the proprietor, respectively

(C) For a municipality, state, federal, or other public agency: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of the U.S. EPA).

(39) **Retire** means to take an engine out of service and not operate it again in the State of California. To retire an engine, the vehicle with the engine may be moved outside of California, sold, or scrapped.

(40) **Small business** is as defined in Government Code section 11342.610.

(41) **Snow removal operations** means removing snow from public roads, private roads, or driveways.

(42) **Specialty vehicle** means a vehicle for which no used vehicle with a cleaner engine that can serve an equivalent function and perform equivalent work is available.

(43) **Tier 0 Engine** means an engine not subject to the requirements in title 13, CCR, section 2423; Title 40, Code of Federal Regulations (CFR), Part 89; or Title 40, CFR, Part 1039.

(44) **Tier 1 Engine** means an engine subject to the Tier 1 new engine emission standards in title 13, CCR, Section 2423(b)(1)(A) and/or Title 40, CFR, Part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 1 Family Emission Limits (FEL) listed in Title 13, CCR, 2423(b)(2)(A) and/or Title 40, CFR, Part 89.112(d).

(45) **Tier 2 Engine** means an engine subject to the Tier 2 new engine emission standards in title 13, CCR, Section 2423(b)(1)(A) and/or Title 40, CFR, Part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 2 FEL listed in Title 13, CCR, 2423(b)(2)(A) and/or Title 40, CFR, Part 89.112(d).

(46) **Tier 3 Engine** means an engine subject to the Tier 3 new engine emission standards in title 13, CCR, Section 2423(b)(1)(A) and/or Title 40, CFR, Part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 3 FEL listed in Title 13, CCR, 2423(b)(2)(A) and/or Title 40, CFR, Part 89.112(d).

(47) **Tier 4 Final Engine** means an engine subject to the final after-treatment-based Tier 4 emission standards in title 13, CCR, Section 2423(b)(1)(B) and/or Title 40, CFR, Part 1039.101. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in Title 13, CCR, 2423(b)(2)(B) and/or Title 40, CFR, Part 1039.101.

(48) **Tier 4 Interim Engine** means an engine subject to the interim Tier 4 emission standards (also known as transitional) in title 13, CCR, Section 2423(b)(1)(B) and/or Title 40, CFR, Part 1039.101. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in Title 13, CCR, 2423(b)(2)(B) and/or Title 40, CFR, Part 1039.101.

(49) **Total maximum power** means the sum of maximum power for all of a fleet's engines that are subject to this regulation. Low-use vehicles, dedicated snow-removal vehicles, and vehicles used solely for emergency operations need not be included in the sum.

(50) **Verified Diesel Emission Control System (VDECS)** means an emissions control strategy, designed primarily for the reduction of diesel PM emissions,

which has been verified pursuant to the *Verification Procedures*. VDECS can be verified to achieve Level 1 diesel PM reductions (25 percent), Level 2 diesel PM reductions (50 percent), or Level 3 diesel PM reductions (85 percent). VDECS may also be verified to achieve NOx reductions. See also definition of Highest Level VDECS.

(51) **VDECS Failure** means the condition of not achieving the emissions reductions to which the VDECS is verified. Such condition could be due to inappropriate installation, damage, or deterioration during use. If a Level 3 VDECS is emitting visible smoke, it should be assumed to have failed.

(52) **Workover rig** means a mobile self-propelled rig used to perform one or more remedial operations, such as deepening, plugging back, pulling and resetting liners, on a producing oil or gas well to try to restore or increase the well's production.

(d) **Performance Requirements** –
Each fleet must meet the fleet average requirements below by March 1 of each year or demonstrate that it met the best available control technology (BACT) requirements as described in section 2449(d)(2). There are differing requirements for large, medium, and small fleets. If various portions of a fleet are under the control of different responsible officials because they are part of different subsidiaries, divisions, or other organizational structures of a company or agency, the fleet portions may comply with the performance requirements separately and be reported separately. However, the total maximum power of the vehicles under common ownership or control determines the fleet size. Fleets owned by low-population county local municipalities are subject to the small fleet requirements, even if their total maximum power exceeds 1,500 horsepower. Captive attainment area fleets are not subject to the NOx fleet average requirements. Section 2449(d)(4) describes requirements for fleets that change size.

(1) **Fleet Average Requirements**

(A) Fleet Average Requirements for Large and Medium Fleets

1. **NOx Fleet Average** - For each compliance date, a large or medium fleet that is not a captive attainment area fleet must demonstrate that its NOx Index was less than or equal to the calculated NOx Target Rate.

The equation for calculating NOx Target Rate is below:

NOx Target Rate = [SUM of (*Max Hp* for each engine in fleet multiplied by *Target* for each engine in fleet) for all engines in fleet] divided by [SUM of (Max *Hp*) for all engines in fleet]

where Target is the NOx target in g/bhp-hr from Table 1. To find the Target for each engine, read the value for the appropriate row based

on the compliance year and the appropriate column based on the engine's maximum power from Table 1.

The equation for calculating NOx Index is below:

NOx Index = [SUM of (*Max Hp* for each engine in fleet multiplied by NOx *Emission Factor* for each engine in fleet) for all engines in fleet] divided by [SUM of (Max *Hp*) for all engines in fleet]

Table 1 shows the targets used to calculate the NOx Target Rate for each compliance date for large and medium fleets. The Emission Factors are defined in Attachment A.

Table 1 – Large and Medium Fleet NOx Targets
For Use in Calculating NOx Target Rates [g/bhp-hr]

	NOx Targets for each Max Hp Group							
Compliance Date: March 1 of Year	**25-49 hp**	**50-74 hp**	**75-99 hp**	**100-174 hp**	**175-299 hp**	**300-599 hp**	**600-750 hp**	**>750 hp**
2010 (large fleets only)	5.8	6.5	7.1	6.4	6.2	5.9	6.1	7.2
2011 (large fleets only)	5.6	6.2	6.7	6.0	5.8	5.5	5.6	6.8
2012 (large fleets only)	5.3	5.8	6.2	5.5	5.3	5.1	5.2	6.5
2013	5.1	5.5	5.7	5.1	4.9	4.7	4.8	6.1
2014	4.9	5.1	5.2	4.7	4.5	4.3	4.4	5.7
2015	4.6	4.8	4.8	4.3	4.1	3.9	4.0	5.3
2016	4.4	4.4	4.3	3.8	3.6	3.5	3.6	4.9
2017	4.2	4.1	3.8	3.4	3.2	3.1	3.2	4.5
2018	4.0	3.7	3.3	3.0	2.8	2.7	2.7	4.1
2019	3.7	3.4	2.8	2.6	2.3	2.3	2.3	3.8
2020	3.5	3.2	2.4	2.2	1.9	1.9	1.9	3.4

2. **Diesel PM Fleet Average** - For each compliance date, a large or medium fleet must demonstrate that its Diesel PM Index was less than or equal to the calculated Diesel PM Target Rate.

The equation for calculating Diesel PM Target Rate is below:

Diesel PM Target Rate = [SUM of (*Max Hp* for each engine in fleet multiplied by *Target* for each engine in fleet*)* for all engines in fleet] divided by [SUM of (Max *Hp*) for all engines in fleet]

where Target is the Diesel PM target in g/bhp-hr from Table 2. To find the Target for each engine, read the value for the appropriate row based on the compliance year and the appropriate column based on the engine's maximum power from Table 2.

The equation for calculating Diesel PM Index is below:

Diesel PM Index = [SUM of (*Max Hp* for each engine in fleet multiplied by PM *Emission Factor* for each engine in fleet) for all engines in fleet] divided by [SUM of (Max *Hp*) for all engines in fleet]

Table 2 shows the targets used to calculate the Diesel PM Target Rate for each compliance date for large and medium fleets. The Emission Factors are defined in Attachment A.

Table 2 – Large and Medium Fleet PM Targets
For Use in Calculating PM Target Rates [g/bhp-hr]

	PM Targets for each Max Hp Group							
Compliance Date: March 1 of Year	**25-49 hp**	**50-74 hp**	**75-99 hp**	**100-174 hp**	**175-299 hp**	**300-599 hp**	**600-750 hp**	**>750 hp**
2010 (large fleets only)	0.46	0.60	0.62	0.33	0.23	0.18	0.20	0.30
2011 (large fleets only)	0.46	0.60	0.62	0.33	0.23	0.18	0.20	0.30
2012 (large fleets only)	0.39	0.43	0.46	0.26	0.16	0.14	0.14	0.24
2013	0.39	0.43	0.46	0.26	0.16	0.14	0.14	0.24
2014	0.29	0.23	0.24	0.18	0.11	0.11	0.11	0.18
2015	0.29	0.23	0.24	0.18	0.11	0.11	0.11	0.18
2016	0.21	0.18	0.19	0.14	0.08	0.08	0.08	0.11
2017	0.21	0.18	0.19	0.14	0.08	0.08	0.08	0.11
2018	0.12	0.12	0.13	0.10	0.06	0.06	0.06	0.08
2019	0.12	0.12	0.13	0.10	0.06	0.06	0.06	0.08
2020	0.08	0.08	0.07	0.06	0.03	0.03	0.03	0.06

(B) **Fleet Average Requirements for Small Fleets**

Small fleets must meet a PM fleet average beginning in 2015. Small fleets are not required to meet a NOx fleet average. To meet the PM fleet average, for each compliance date, a small fleet must demonstrate that its Diesel PM Index was less than or equal to the calculated Diesel PM Target Rate.

The equations for calculating Target Rates and Diesel PM Index are below:

Diesel PM

Target Rate = [SUM of ((Max Hp for each engine in fleet multiplied by Target for each engine in fleet)] divided by [SUM of (Max *Hp*) for all engines in fleet]

where Target is the PM target in g/bhp-hr from Table 3. To find the Target for each engine, read the value for the appropriate row based on the compliance year and the appropriate column based on the engine's maximum power from Table 3.

Diesel PM Index = [SUM of (*Max Hp* multiplied by PM *Emission Factor*) for each engine in fleet] divided by [SUM of (Max *Hp*) for all engines in fleet]

Table 3 shows the targets used to calculate the Diesel PM Target Rate for each compliance date for small fleets. The Emission Factors are defined in Attachment A.

Table 3 – Small Fleet PM Targets
For Use in Calculating PM Target Rates [g/bhp-hr]

	PM Targets for each Max Hp Group							
Compliance Date: March 1 of Year	**25-49 hp**	**50-74 hp**	**75-99 hp**	**100-174 hp**	**175-299 hp**	**300-599 hp**	**600-750 hp**	**>750 hp**
2015	0.46	0.60	0.62	0.33	0.23	0.18	0.20	0.30
2016	0.46	0.60	0.62	0.33	0.23	0.18	0.20	0.30
2017	0.39	0.43	0.46	0.26	0.16	0.14	0.14	0.24
2018	0.39	0.43	0.46	0.26	0.16	0.14	0.14	0.24
2019	0.29	0.23	0.24	0.18	0.11	0.11	0.11	0.18
2020	0.29	0.23	0.24	0.18	0.11	0.11	0.11	0.18
2021	0.21	0.18	0.19	0.14	0.08	0.08	0.08	0.11
2022	0.21	0.18	0.19	0.14	0.08	0.08	0.08	0.11
2023	0.12	0.12	0.13	0.10	0.06	0.06	0.06	0.08
2024	0.12	0.12	0.13	0.10	0.06	0.06	0.06	0.08
2025	0.08	0.08	0.07	0.06	0.03	0.03	0.03	0.06

(C) **Electric and Alternative Fuel Vehicles and Systems Used to Replace Diesel Vehicles** - Fleets with electric or alternative fuel vehicles may include such vehicles in their fleet average index and target rate calculations as follows:

1. **Electric and Alternative Fuel Vehicles Purchased on or after January 1, 2007**
   a. Fleets may include an electric and alternative fuel vehicle purchased on or after January 1, 2007, with a maximum power 25 horsepower or greater (or that replaced a diesel vehicle with maximum power 25

horsepower or greater) in their fleet average if all of the following conditions are met:

i. The owner can demonstrate it serves a function and performs the work equivalent to that of diesel vehicles and is used for a purpose for which diesel vehicles are predominantly used,
ii. The electric or alternative fuel vehicle is used predominantly outdoors,
iii. The electric or alternative fuel vehicle is not already included in the fleet average emission level requirements for large spark ignition engine fleets in title 13, Section 2775.1; and
iv. If the vehicle is an alternative fuel vehicle, the owner must demonstrate it is certified to a NOx standard less than or equal to the Tier 1 NOx standard for the same horsepower in title 13, CCR, Section 2423(b)(1)(A) and is less than or equal to the NOx emissions of a diesel engine of the same model year and horsepower.

b. For the purposes of compliance with sections 2449(d)(1)(A) and (d)(1)(B), electric vehicles shall be credited as follows:
   i. **Max Hp for Electric Vehicles** - For an electric vehicle that replaced a diesel vehicle in the owner's fleet, the maximum power of the diesel vehicle replaced may be used as the electric vehicle's *Max Hp*. Otherwise, the electric vehicle's own maximum power rating should be used.
   ii. **Double Credit for Electric in 2010-2016** - For compliance dates in 2010 through 2016, the *Max Hp* of all electric vehicles purchased on or after January 1, 2007 may be doubled in determining the *Max Hp* that is used in calculating the Diesel PM Index, and as appropriate, NOx Index. An *Emission Factor* of 0 may be used. The *Max Hp* of each electric vehicle is included but not doubled in the calculation of Diesel PM Target Rate and NOx Target Rate.
   iii. **Single Credit for Electric in 2017 and Later** - For compliance dates in year 2017 and later, the *Max Hp* of all electric vehicles purchased on or after January 1, 2007 is used in determining the *Max Hp* that is used in calculating the Diesel PM and NOx Target Rates, Diesel PM Index, and, as appropriate, NOx Index. An *Emission Factor* of 0 may be used.
c. For the purposes of compliance with sections 2449(d)(1)(A) and (d)(1)(B), each alternative fuel vehicle should use an Emission Factor equal to the emission standard to which its engine is certified in g/bhp-hr. If the alternative fuel vehicle is not certified to a NOx or diesel PM emission standard, the owner may provide an appropriate emission factor, as demonstrated to the Executive Officer.

2. **Electric and Alternative Fuel Vehicle Purchased Prior to January 1, 2007**

a. Electric airport GSE vehicles with a maximum power of 25 horsepower or greater (or that replaced a diesel vehicle with maximum power 25 horsepower or greater) purchased prior to January 1, 2007, may be partially counted in the fleet average calculations as follows:
   i. **Max Hp for Electric Vehicles** - For an electric vehicle that replaced a diesel vehicle in the owner's fleet, the maximum power of the diesel vehicle replaced may be used as the electric vehicle's *Max Hp*. Otherwise, the electric vehicle's own maximum power rating should be used.
   ii. Include such vehicle's *Max Hp* times 0.2 as the *Max Hp* in the calculating the Target Rate, Diesel PM Index, and, as appropriate, NOx Index in section 2449(d)(1)(A) and (d)(1)(B), along with an *Emission Factor* of 0.

b. Fleet owners may count a non-GSE electric or alternative fuel vehicle purchased prior to January 1, 2007 in the fleet average calculations if all of the following conditions are met:
   i. The owner can demonstrate it serves a function and performs the work equivalent to that of diesel vehicles and is used for a purpose for which diesel vehicles are predominantly used,
   ii. the electric or alternative fuel vehicle is used predominantly outdoors,
   iii. the vehicle is not already counted toward the fleet average emission level requirements for large spark ignition engine fleets in Title 13, CCR section 2775.1; and
   iv. if the vehicle is alternative fuel vehicle, certified NOx emission levels are lower than the NOx standard for the same model year and horsepower in Title 13, CCR, Section 2423(b)(1) and Title 40, CFR, Part 89.112(a) and Title 40, CFR, Part 1039.101.

3. **Stationary or Portable System Used to Replace Mobile Diesel Vehicle** Fleet owners may include portable or stationary systems that replace mobile diesel vehicles, such as a conveyor system used to replace diesel haul trucks at a mine, in the fleet average calculations. The system may be considered in the fleet average calculations by including the maximum power of the diesel vehicles replaced in the calculations of Target Rate, Diesel PM Index, and NOx Index above, along with an *Emission Factor* of 0. In order to count such a system, all the following conditions must be met:
   a. The owner must demonstrate that it replaced an off-road diesel fueled vehicle subject to this regulation on or after January 1, 2007, and
   b. The system is not already counted toward the fleet average emission level requirements for large spark ignition engine fleets in title 13, CCR section 2775.1 or for portable diesel engine fleets in title 17, CCR section 93116.3.

(D) **Hours in Fleet Average Option** – As an alternative to the formulas for calculating NOx index and diesel PM index in section 2449(d)(1)(A) and (B), fleet owners may opt to include annual hours of operation for all engines in the fleet on the compliance date in the calculation as follows:

NOx Index = [SUM of (*Max Hp* for each engine in fleet on compliance date multiplied by *NOx Emission Factor* for each engine in fleet on compliance date multiplied by *Annual Hours of Operation* for each engine in fleet on compliance date since the previous year's compliance date)] divided by [SUM of (Max *Hp* for each engine in fleet on compliance date multiplied by *Annual Hours of Operation* for each engine in fleet on compliance date since the previous year's compliance date)]

Diesel PM Index = [SUM of (*Max Hp* for each engine in fleet on compliance date multiplied by PM *Emission Factor* for each engine in fleet on compliance date multiplied by *Annual Hours of Operation* for each engine in fleet on compliance date since the previous year's compliance date)] divided by [SUM of (Max *Hp* for each engine in fleet on compliance date multiplied by *Annual Hours of Operation* for each engine in fleet on compliance date since the previous year's compliance date)]

Fleets that choose this option must include hours in all index calculations for the compliance date.

(2) **<u>BACT Requirements</u> –** Each year, each fleet must determine if it will be able to meet the fleet average requirements for the next March 1 compliance date, and if not, the following BACT requirement must be met. If a fleet does not meet the NOx target rate in 2449(d)(1), it must meet the BACT turnover requirements in 2449(d)(2)(A) below. If a fleet does not meet the Diesel PM target rate in 2449(d)(1), it must meet the BACT Retrofit Requirements in 2449(d)(2)(B). Fleets that fail to meet both the NOx and Diesel PM target rates in 2449(d)(1) in a compliance year must first meet the BACT turnover requirements in 2449(d)(2)(A) below in that year and then meet the BACT Retrofit Requirements in 2449(d)(2)(B) in that year.

(A) **Turnover Requirements for Fleets Not Meeting NOx Target Rate** – A fleet may meet the turnover requirements by retiring a vehicle, designating a vehicle as a low-use vehicle, repowering a vehicle, or applying a VDECS verified to achieve NOx reductions. If repowering a vehicle, the new engine must be Tier 2 or higher and must be a higher tier than the engine replaced. The method for counting VDECS verified to achieve NOx reductions is specified in 2449(d)(2)(A)8.

1. **Turnover Rate** –
   If a fleet does not meet the NOx Target Rate in 2449(d)(1) on a compliance date on or before March 1, 2015, it must demonstrate on the applicable compliance date that it has turned over 8 percent of the total maximum power of the fleet that existed on March 1 of the previous year since March 1 of the previous year. If a fleet does not meet the NOx Target Rate in 2449(d)(1) on a compliance date after March 1, 2015, it

must demonstrate on the applicable compliance date that it turned over 10 percent of its total maximum power that existed on March 1 of the previous year since March 1 of the previous year. Any carryover turnover credit previously accrued may be applied towards the turnover required in a later year.

2. **Carryover turnover credit** –
   a. **Beginning** – All fleets other than those meeting the criteria in (i) or (ii) below begin with zero carryover turnover credit on March 1, 2009. All fleets may begin accumulating carryover turnover credit on March 1, 2010.
      i. Credit for Early Repowers - Fleets that have repowered their vehicles with Tier 1 or higher engines before March 1, 2009 begin with a carryover turnover credit (indicated as a percentage) equal to: 100 multiplied by the maximum power of Tier 1 or higher repower engines installed in affected vehicles before March 1, 2009 divided by the total maximum power of fleet on March 1, 2009. The credit can only be claimed for engines that remain in the fleet. To claim credit, fleets must keep adequate records as described in 2449(h).
      ii. **Credit for Early Retirement** – Fleets that have retired their Tier 0 vehicles at an average rate greater than 8 percent of maximum power per year between March 1, 2006 and March 1, 2009 begin with carryover turnover credit (as a percentage) equal to: 100 multiplied by the [(Total maximum power of Tier 0 vehicles retired between March 1, 2006 and March 1, 2009) minus (Total maximum power of Tier 0 vehicles added between March 1, 2006 and March 1, 2009)] divided by (Total maximum power of fleet on March 1, 2009) minus 24. Tier 0 vehicles repowered with newer engines are counted under (i) above and should not be counted under (ii). To claim such credit, fleets must keep adequate records as described in 2449(h).
   b. **Accumulating carryover turnover credit** –
      i. **2010-2015 -** From March 1, 2010 through March 1, 2015, a fleet accumulates carryover turnover credit each year it turns over more than 8 percent of its maximum power. The amount accumulated is the percent of maximum power turned over in excess of 8 percent in the 12 months prior to March 1 of the year in which the carryover is calculated.
      ii. **After 2015 -** After March 1, 2015, a fleet accumulates carryover turnover credit each year it turns over more than 10 percent of its maximum power. The amount accumulated is the percent of maximum power turned over in excess of 10 percent in the 12 months prior to March 1 of the year in which the carryover is calculated.

c. **Using carryover turnover credit** - Accumulated carryover turnover credit may be applied to meeting the turnover requirements of section 2449(d)(2)(A)1 in a later year. The amount of carryover turnover credit used to meet the turnover requirements in any one year is subtracted from the carryover turnover credit total available in subsequent years. The amount of actual turnover plus the amount of carryover turnover credit used must equal the minimum BACT turnover rate required by 2449(d)(2)(A)1.

3. **Order of turnover** – All engines in a fleet that were not subject to a PM standard for new engines (Tier 0 and Tier 1 with no PM standard, i.e., Tier 1 engines between 50 and 174 horsepower) must be turned over before turnover of any other higher tier engines may be counted toward the turnover requirements in 2449(d)(2)(A) or toward accumulating carryover turnover credit.
4. **Exemptions** – Vehicles meeting the criteria below are exempt from the turnover requirement. A fleet is exempt from the turnover requirement in 2449(d)(2)(A)1. if all its vehicles meet one of the criteria below:
   a. Vehicles less than 10 years old – If all vehicles in a fleet will be less than 10 years old on the compliance date, no turnover is required.
   b. Specialty vehicles if all the following criteria are met:
      i. The fleet has turned over all other vehicles first,
      ii. No repower is available for the specialty vehicle, as demonstrated to the Executive Officer,
      iii. A used vehicle with a cleaner engine is not available to serve a function and perform the work equivalent to that of the specialty vehicle, as demonstrated to the Executive Officer, and
      iv. The specialty vehicle has been retrofit with highest level VDECS.
   c. A vehicle retrofit within the last six years with a Level 2 or 3 VDECS that was highest level VDECS at the time of retrofit.
   d. A vehicle with a Tier 4interim engine or Tier 4 final engine.
5. **Delay Tier 1 turnover** - All vehicles with a Tier 1 or higher engine are exempt from the turnover requirement until March 1, 2013, provided that all Tier 0 vehicles in the owner's fleet that do not qualify for an exemptions under section 2449(d)(2)(A)4. have been turned over.
6. **Designating vehicle as low-use** – A fleet may designate a vehicle that was formerly used 100 hours or more per year as low-use by limiting its use to less than 100 hours per year and committing to keep its use less than 100 hours per year.
   a. Only vehicles formerly used 100 hours or more per year may be so designated. Vehicles so designated may be counted toward the turnover requirements.
   b. Once designated as low-use, a vehicle may never again be used more than 100 hours per year by the fleet unless the vehicle meets the adding vehicles requirements in section 2449(d)(7).
   c. A fleet is not obliged to designate a vehicle whose use drops below 100 hours per year as low-use, nor to count it toward the turnover

requirements. If such a vehicle is not designated as low-use, its use may increase beyond 100 hours per year in subsequent years.

7. **Rounding** - If the horsepower required to be turned over under section 2449(d)(2)(A) is less than half of the maximum power of the lowest horsepower engine in the fleet that is subject to the turnover requirements, the next engine is not required to be turned over. However, on the next year's compliance date, any horsepower not turned over due to this rounding provision must be added to the required turnover under section 2449(d)(2)(A). Once the required horsepower to be turned over equals or exceeds half of the maximum power of the next engine in the fleet that is subject to the turnover requirements, the next engine must be turned over.
8. **Turnover Credit for NOx Retrofits** – VDECS that have been verified as achieving NOx reductions may be used to satisfy the turnover requirements in section 2449(d)(2)(A)1 on each compliance date as follows:
   Turnover credit for NOx retrofits (as a percentage) equals 100 multiplied by (Verified Percent NOx Reduction divided by 60 percent) multiplied by (Maximum power on which VDECS verified to achieve NOx reductions was installed in last 12 months) divided by (Total maximum power of fleet on compliance date). Turnover credit for NOx retrofits may be applied to meet the turnover requirements of section 2449(d)(2)(A)1 or to accumulate carryover turnover credit.

(B) **PM Retrofit Requirements for Fleets Not Meeting Diesel PM Target Rate**

1. **PM Retrofit Rate -** If a fleet does not meet the Diesel PM Target Rate in 2449(d)(1), it must demonstrate that it retrofit 20 percent of its total maximum power (not including specialty vehicles retrofitted and exempted from turnover in section 2449(d)(2)(A)4.b.) with highest level VDECS since March 1 of the previous year. Any carryover retrofit credit previously accrued may be applied toward the 20 percent retrofit required.
2. **Carryover PM retrofit credit** –
   a. **Beginning** - All fleets other than those meeting the criteria in (i) below begin with zero carryover retrofit credit on March 1, 2009. All fleets may begin accumulating carryover retrofit credit on March 1, 2010.
      i. **Double Credit for Early PM Retrofits** – Fleets that have installed the highest level VDECS on their vehicles before March 1, 2009 begin with a carryover retrofit credit (calculated as a percentage) equal to: 200 multiplied by Ttotal maximum power of engines on which highest level VDECS was installed before March 1, 2009 divided by Total maximum power of fleet on March 1, 2009.
   b. **Accumulating carryover PM retrofit credit** – A fleet accumulates carryover retrofit credit each year it retrofits more than 20 percent of its maximum power. The amount accumulated is the percent of maximum power retrofit in excess of 20 percent in the past 12 months prior to March 1.

c. **Using carryover PM retrofit credit** - Accumulated carryover retrofit credit may be applied to meeting the retrofit requirements of section 2449(d)(2)(B)1. in a later year. The amount of carryover retrofit credit used to meet the retrofit requirements in any one year is subtracted from the carryover retrofit credit total available in subsequent years. The amount of actual retrofit plus the amount of carryover retrofit credit used must equal the minimum BACT retrofit rate required by 2449(d)(2)(B)(1).

3. **Order of PM Retrofit –** No Level 2 VDECS may be counted toward the retrofit requirements in 2449(d)(2)(B) until all engines in vehicles older than 5 years for which the highest level VDECS available is a Level 3 VDECS have been retrofit, except for specialty vehicles utilizing the exemption in Section 2449(d)(2)(A)4.b. for which Level 2 is the highest level VDECS.
4. **Exemptions –** The following exemptions from the retrofit requirement apply, provided that retrofits have been or are being applied to all other engines in the owner's fleet not subject to these exemptions. A fleet is exempt from the retrofit requirement in 2449(d)(2)(B)1. if all its vehicles' engines meet one of the criteria below:
   a. Engines in vehicles less than 5 years old,
   b. Engines for which there is no highest level VDECS (i.e., for which there is no Level 2 or 3 VDECS, or for which there is a Level 2 or 3 VDECS which cannot be used without impairing the safe operation of the vehicle as demonstrated per section 2449(e)(8)),
   c. Engines equipped with an original equipment manufacturer diesel particulate filter that came new with the vehicle, or
   d. Engines already retrofit with a Level 2 or 3 VDECS that was the highest level VDECS available at time of installation. An engine with a Level 2 VDECS that was not the highest level VDECS at time of installation does not qualify for this exemption.
5. **Rounding** - If the horsepower required to be retrofit under section 2449(d)(2)(B) is less than half of the maximum power of the lowest horsepower engine in the fleet that is subject to the retrofit requirements, the next engine is not required to be retrofitted. However, on the next year's compliance date, any horsepower not retrofit due to this rounding provision must be added to the required retrofit under section 2449(d)(2)(B). Once the required horsepower to be retrofit equals or exceeds half of the maximum power of the next engine in the fleet that is subject to the retrofit requirements, the next engine must be retrofitted.

(3) **Idling -** The idling limits in section 2449(d)(3)(A) shall be effective and enforceable immediately upon this regulation being certified by the Secretary of State. Fleets must meet the following idling limits.

(A) **Idling Limit -** No vehicle or engines subject to this regulation may idle for more than 5 consecutive minutes. Idling of a vehicle that is owned by a rental

company is the responsibility of the renter or lessee, and the rental agreement should so indicate. The idling limit does not apply to:

1. idling when queuing,
2. idling to verify that the vehicle is in safe operating condition,
3. idling for testing, servicing, repairing or diagnostic purposes,
4. idling necessary to accomplish work for which the vehicle was designed (such as operating a crane),
5. idling required to bring the machine system to operating temperature, and
6. idling necessary to ensure safe operation of the vehicle.

(B) **Written Idling Policy -** As of March 1, 2009, medium and large fleets must also have a written idling policy that is made available to operators of the vehicles and informs them that idling is limited to 5 consecutive minutes or less.

(C) **Waiver** - A vehicle owner may apply to the Executive Officer for a waiver to allow additional idling in excess of 5 consecutive minutes. The Executive Officer shall grant such a request upon finding that the vehicle owner has provided sufficient justification that such idling is necessary.

(4) **Changing Fleet Size** –

(A) Small fleets that become medium fleets must meet the medium fleet requirements on the reporting date two years subsequent.

(B) Large fleets that become medium fleets must meet the medium fleet requirements on the next reporting date.

(C) Medium fleets that become small fleets must meet the small fleet requirements on the next reporting date.

(5) **New Fleets** – New fleets must meet the fleet average requirements in section 2449(d)(1) within three months of purchasing vehicles subject to the regulation or bringing such vehicles into the State of California for the first time after March 1, 2009. New fleets do not have the option of complying with the BACT requirements in section 2449(d)(2). New fleets must comply with the idling requirements in section 2449(d)(3) immediately upon purchasing vehicles subject to the regulation or upon bringing such vehicles into the State. New fleets must report vehicles subject to the regulation to ARB within 30 days of purchasing or bringing such vehicles into the State, in accordance with the requirements in section 2449(g).

(6) **Fleet Ownership Transferred –** If ownership of an entire fleet that was meeting the BACT requirements in lieu of the fleet average requirements is transferred to a new fleet owner who did not own a fleet before the transfer of ownership, the fleet may continue to meet the BACT requirements. That is, transfer of ownership to a new owner who did not own a fleet before does not automatically require the fleet to begin meeting the fleet average requirements in section 2449(d)(1). Existing fleet may acquire other entire fleets without condition if both fleets were in compliance with the individual fleet requirements. If existing fleets acquire portions of fleets or entire fleets that did not previously comply with the regulation, however, they must meet the requirements for adding vehicles in section 2449(d)(7) when adding the entire fleet.

(7) **Adding Vehicles –**

(A) **Beginning March 1, 2009** - After March 1, 2009 a fleet may not add a vehicle with a Tier 0 engine to its fleet.

(B) **Between the First and Final Compliance Dates** – The following requirements apply between March 1, 2010 and March 1, 2020 for large fleets, between March 1, 2013 and March 1, 2020 for medium fleets, and between March 1, 2015 and March 1, 2025 for small fleets.

1. **Fleets Meeting the Target Rates** - If a fleet met the fleet average target rates in 2449(d)(1) on the previous compliance date, when it adds a vehicle to its fleet, the fleet must demonstrate that the fleet still meets the fleet average target rates within three months of adding the vehicle. That is, fleets may not add vehicles that cause them to exceed the most recent fleet average target rates. The added vehicle also must be included in the fleet average demonstration on the next compliance date.
2. **Fleets Not Meeting the Fleet Average Targets** - If a fleet did not meet the fleet average requirements in 2449(d)(1) on the previous compliance date, the fleet may not add a vehicle to its fleet that would further increase its emissions above the fleet average target rate, as described below.
    a. **Large and Medium Fleets** - A large or medium fleet that met the BACT requirements in section 2449(d)(2) instead of the fleet average requirements in section 2449(d)(1) on the most recent compliance date may not add a vehicle to its fleet unless all of the following conditions are met:
        i. The engine is Tier 2 or higher. (For the purposes of this requirement, a vehicle may be assumed to meet the new engine emission standard tier in effect for the model year unless the engine is a flexibility engine certified January 1, 2007 or later to the implementation flexibility standards 13 CCR 2423(d), in which case the emission standard tier to which the engine is certified should be used.)
        ii. The vehicle engine's PM Emission Factor (after being adjusted for any VDECS) is less than or equal to the PM Target in Table 2 for engines in the same horsepower group for the most recent compliance date, and
        iii. The vehicle engine's NOx Emission Factor (after being adjusted for any VDECS) is less than or equal to the NOx Target in Table 1 for engines in the same horsepower group for the most recent compliance date.
    b. **Small Fleets** – A small fleet that met the BACT requirements in section 2449(d)(2) instead of the fleet average requirements in section 2449(d)(1) on the most recent compliance date may not add a vehicle to its fleet unless both the following conditions are met:
        i. The vehicle engine is Tier 2 or higher. (For the purposes of this requirement, a vehicle may be assumed to meet the new engine emission standard tier in effect for the model year unless the engine is a flexibility engine certified January 1, 2007 or later to the implementation flexibility standards 13 CCR 2423(d), in which case

the emission standard tier to which the engine is certified should be used.)

ii. The vehicle engine's PM Emission Factor (after being adjusted for any VDECS) is less than or equal to the PM Target in Table 3 for engines in the same horsepower group for the most recent compliance date.

(C) **After the Final Compliance Date** - Commencing respectively on March 1, 2020 for large and medium fleets, and March 1, 2025 for small fleets, no fleet owner may add a vehicle to his fleet, unless the vehicle is equipped with an engine meeting the Tier 3, Tier 4 interim, or Tier 4 final emission standards. If the engine did not come with an original equipment manufacturer diesel particulate filter, it must be equipped with the highest level VDECS within 3 months of acquisition.

(8) **VDECS Installation–** Before installing a VDECS on a vehicle, the vehicle owner must:

(A) Ensure that the VDECS is verified for use with the engine and vehicle, as described in the Executive Order for the VDECS.

(B) Ensure that use of the vehicle is consistent with the conditions of the Executive Order for the VDECS.

(C) Ensure that the diesel emission control strategy is installed in a verified configuration.

(D) Ensure that the engine to be retrofit is tuned up so that it meets engine manufacturer's specifications prior to VDECS installation.

(9) **VDECS Maintenance -** The owner of a vehicle retrofit with a VDECS must ensure all maintenance on the VDECS and engine is performed as required by the respective manufacturers.

(10) **Compliance After the Final Compliance Date** –

(A) Commencing respectively on March 1, 2020, if a large or medium fleet does not meet the NOx fleet average target rate for the final compliance date in section 2449(d)(1), the fleet must continue to meet the BACT turnover requirements in Section 2449(d)(2)(A) and report annually each year until it does so.

(B) Except as provided below, commencing respectively on March 1, 2021 for large and medium fleets, and March 1, 2026 for small fleets, all vehicles in each fleet must be equipped with the highest level VDECS. The following engines and vehicles are exempt from this requirement:

1. Low-use vehicles,
2. Engines for which there is no highest level VDECS (i.e., for which there is no Level 2 or 3 VDECS, or for which there is a Level 2 or 3 VDECS which cannot be used without impairing the safe operation of the vehicle as demonstrated per section 2449(e)(8)),
3. Engines equipped with an original equipment manufacturer diesel particulate filter that came new with the vehicle,
4. Engines already retrofit with a Level 2 or 3 VDECS that was the highest level VDECS available at time of installation, and

5. Vehicles in large and medium fleets that have not yet met the NOx fleet average target rate for the final compliance date in section 2449(d)(1).

(e) **Special Provisions/ Compliance Extensions**

(1) **VDECS Failure:** In the event of a failure or damage of a VDECS, the following conditions apply:

(A) **Failure or Damage During the Warranty Period.** If a VDECS fails or is damaged within its warranty period and it can not be repaired, the owner must replace it with the same level VDECS or higher for the vehicle within 90 days of the failure.

(B) **Failure or Damage Outside the Warranty Period.**

1. **Before Final Compliance Date -** If a VDECS fails or is damaged outside of its warranty period before March 1, 2021 for large and medium fleets, or before March 1, 2026 for small fleets and it can not be repaired and the fleet would not meet the fleet average target rates in 2449(d)(1) for the most recent compliance date if the VDECS that failed were removed, then within 90 days of the failure, the owner must replace it with the highest level VDECS available for the engine at time of failure.
2. **After Final Compliance Date** - If a VDECS fails or is damaged outside of its warranty period on or after March 1, 2021 for large and medium fleets, or on or after March 1, 2026 for small fleets and it can not be repaired, then within 90 days of the failure, the owner must replace it with the highest level VDECS available for the engine at time of failure, regardless of whether the fleet met the fleet average requirements in 2449(d)(1) for the most recent compliance date.

(2) **Fuel-based Strategy VDECS:**

(A) If a fleet owner determines that the highest level VDECS for a large percentage of his fleet would be a Level 2 fuel verified as a diesel emission control strategy, and implementation of this VDECS would require installation of a dedicated storage tank, then the fleet owner may request prior approval from the Executive Officer to allow use of the level 2 fuel-based strategy across its fleet.

(B) Extension for Discontinuation of Fuel Verified as a Diesel Emission Control Strategy. If a fleet owner who has relied upon a fuel verified as a diesel emission control strategy to meet the fleet average requirements in 2449(d)(1) discontinues use of the fuel due to circumstances beyond the fleet owner's control, the owner may apply to the Executive Officer no later than 30 days after discontinuation for up to two years additional time to come back into compliance with the fleet average requirements in 2449(d)(1). The Executive Officer then has 30 days to act upon the request. Fleets that did not meet the fleet average requirements in 2449(d)(1) in the most recent compliance year may not apply for this extension.

(3) **Exemption for Vehicles Used for Emergency Operations:** Vehicles used solely for emergency operations are exempt from the performance requirements in section 2449(d) but still must be labeled and reported in accordance with

sections 2449(f) and (g). Vehicles used solely for emergency operations need not be included when calculating fleet average indices or target rates, when determining fleet size, or when calculating the required horsepower for the BACT turnover and retrofit requirements in section 2449(d)(2).

Owners of vehicles brought into California for emergency operations that last longer than three months must report such entry to ARB and request an equipment identification number within three months of entering the state. Vehicles used solely for emergency operations and that stay in California for less than three months do not have to be labeled. For vehicles used both for emergency operations and for other purposes, hours of operation accrued when the vehicle is used for emergency operations do not need to be included when determining whether the vehicle meets the low-use vehicle definition.

(4) **Special Provisions for Snow Removal Vehicles:** Dedicated snow removal vehicles are exempt from the performance requirements in section 2449(d) but still must be labeled and reported in accordance with sections 2449(f) and (g). Dedicated snow removal vehicles need not be included when calculating fleet average indices or target rates, when determining fleet size, or when calculating the required horsepower for the BACT turnover and retrofit requirements in section 2449(d)(2). Publicly owned vehicles used exclusively to support snow removal operations (such as a loader without a special snow removal attachment), but which do not meet the dedicated snow removal vehicle definition, are exempt from the performance requirements in section 2449(d) but still must be labeled and reported in accordance with sections 2449(f) and (g).

(5) **Use of Experimental Diesel Emission Control Strategies:** If a fleet owner wishes to use an experimental, or non-verified, diesel emission control strategy, the owner must first obtain approval from the Executive Officer for a compliance extension. To obtain approval, the owner must demonstrate either that (A) a VDECS is not available or not feasible or not safe for their vehicle or application, or (B) that use of the non-verified strategy is needed to generate data to support verification of the strategy. The owner or operator shall keep documentation of this use in records as specified. The application must include emissions data and detailed control technology description demonstrating the experimental control achieves at least a Level 2 diesel PM emission reduction. If the application demonstrates that the device achieves at least 50 percent reductions in diesel PM, it may be treated like a Level 2 VDECS. If the application demonstrates that the device achieves at least 85 percent reductions in PM, it may be treated like a Level 3 VDECS. If the application demonstrates that the device achieves a NOx reduction over 15%, the NOx reduction may be counted.

Each vehicle engine retrofit with the experimental strategy will be considered to be in compliance for the duration of the experiment, until it expires. The owner must bring the fleet into compliance prior to the expiration of the experimental diesel emission control strategy extension.

(6) **Compliance Extension for Equipment Manufacturer Delays:** An owner or operator who has purchased new equipment (including VDECS) or vehicles in order to comply with this regulation, will be excused from immediate compliance if the new equipment or vehicles have not been received due to manufacturing delays as long as the following conditions are met:

(A) The equipment or vehicle was purchased, or the owner and seller had entered into contractual agreement for the purchase, at least six months prior to the required compliance date; and

(B) Proof of purchase, such as a purchase order or signed contract for the sale, including engine specifications for each applicable piece of equipment, must be maintained by the owner and provided to an agent or employee of ARB upon request.

(C) The new equipment or vehicles are immediately placed into operation upon receipt.

(7) **Exemption for Low-Use Vehicles:** Low-use vehicles are exempt from the performance requirements in section 2449(d) but still must be labeled and reported in accordance with sections 2449(f) and (g). Low-use vehicles need not be included when calculating fleet average indices or target rates, when determining fleet size, or when calculating the required horsepower for the BACT turnover and retrofit requirements in section 2449(d)(2).

Vehicles that formerly met the low-use vehicle definition, but whose use increases to 100 hours per year or greater must meet the BACT requirements or be included in the fleet average calculation by the next compliance date. For example, a formerly low-use engine that exceeds 100 hours per year between March 1, 2013 and February 28, 2014 must be included in the fleet average indices and target rates reported in 2014.

(8) **VDECS That Impairs Safe Operation of Vehicle**: A fleet owner may request that the Executive Officer find that a VDECS should not be considered the highest level VDECS available because (A) it cannot be safely installed or operated in a particular vehicle application, or (B) its use would make the use of another existing retrofit device that is required for occupational safety and health reasons, such as a diesel oxidation catalyst, impossible. The requesting party shall provide documentation to support its claims. Documentation must include reports and findings of federal, state or local government agencies, independent testing laboratories, engine or equipment manufacturer studies, or other equally reliable sources. The request will only be approved if the requesting party has made a thorough effort to find a safe method for installing and operating the VDECS, including considering the use of mirrors, various locations for VDECS mounting, and use of an actively regenerated VDECS. The Executive Officer shall review the documentation submitted and any other reliable information that he or she wishes to consider and shall make his or her determination based upon the totality of the evidence. The Executive Officer shall send a written determination letter to the requesting party within 60 days of the request being submitted.

(9) **Compliance Flexibility for Delays in Availability of Tier 4 Vehicles**: If the Executive Officer finds that there is a delay in availability of vehicles with engines meeting the Tier 4 interim or final emission standards so that vehicles with Tier 4 interim or final engines to meet a fleet's needs are not available or not available in sufficient numbers or in a sufficient range of makes, models, and sizes, then the Executive Officer may grant an extension to the fleet from the requirements in 2449(d)(1) and 2449(d)(2). If such a delay affects a group of fleets, the Executive Officer may issue an extension to all fleets with certain characteristics. Any such delay must be documented based on verifiable information from the fleet regarding its vehicle needs and/or verifiable information from the equipment manufacturer, engine manufacturer, distributor, and/or dealer regarding the unavailability of appropriate vehicles with Tier 4 interim or final engines.

(10) **Exemption for Vehicles Awaiting Sale** - Vehicles in the possession of dealers, financing companies, or other entities who do not intend to operate the vehicle nor offer the vehicle for hire, that are operated only to demonstrate functionality to potential buyers or to move short distances while awaiting sale or for maintenance purposes are exempt from all requirements in section 2449.

(11) **Exemption for Vehicle Used Over Half the Time for Agriculture** - A vehicle that is used by its owner for agricultural operations for over half of its annual operating hours but that is not used exclusively for agricultural operations is exempt from the performance requirements in section 2449(d) but still must be labeled and reported in accordance with sections 2449(f) and (g). Vehicles used exclusively for agricultural operations are completely exempt from the performance, labeling, and reporting requirements. A vehicle that is rented or leased for use by others is exempt only if it is exclusively used for agricultural operations.

(f) **Labeling** – All vehicles with engines subject to the regulation must be labeled with an ARB-issued equipment identification number (EIN). ARB will issue unique EIN to the fleet owner for each vehicle subject to the regulation in response to the initial reporting described in Section 2449(g)(1) and the annual reporting described in Section 2449 (g)(2). All owners of vehicles subject to the regulation must comply with the following labeling requirements.

(1) Application for EIN for added vehicle – Notwithstanding the requirements for vehicles used for emergency operations in section 2449(e)(3), if a fleet owner adds a vehicle to his California fleet or brings a vehicle into California from outside the state, the owner has 30 days from the date of purchase or the date the vehicle enters California to apply to ARB for an EIN or, if the vehicle already has an EIN, to inform ARB of the purchase. If the reporting date under Section 2449(g)(2) occurs before 30 days after purchase, the annual reporting may serve as the application for an EIN.

Applications for an equipment identification number should be submitted electronically per the guidelines approved by the Executive Officer for electronic data reporting, or mailed or delivered to ARB at the address listed immediately below:

California Air Resources Board
Mobile Source Control Division (In-Use Off-road Diesel)
P.O. Box 2815
Sacramento, CA 95812.

(2) Affixing Equipment Identification Number – Within 30 days of receipt of the ARB-issued EIN, owners shall permanently affix or paint the EIN(s) on the vehicle in clear view according to the following specification:
(A) The EIN shall be white on a red background.
(B) The EIN shall be located in clear view on the right (starboard) side of the outside of the vehicle approximately 5 feet above the ground, or, if the vehicle is not 5 feet tall, lower on the vehicle.
(C) Each character shall be at least 3 inches (7.6 centimeters) in height and 1.5 inches (3.8 centimeters) in width.
(D) The EIN shall be maintained in a manner that retains its legibility for the entire life of the vehicle.

(g) **Reporting** – Reporting is required for each and every fleet. Large and medium fleets may report separately for different divisions or subsidiaries of a given company or agency. Fleet owners must submit reporting information using forms approved by the Executive Officer However, in engine data required to be reported is unknown, such engines are assumed to be 1900-1969 vehicles for fleet average.
(1) Initial reporting – All fleet owners must submit the information in section 2449(g)(1)(A) through (C) to ARB by their initial reporting date. In the initial reporting, fleet owners must report information regarding each vehicle subject to this regulation in their fleet as of March 1, 2009. The initial reporting date for large fleets is April 1, 2009. The initial reporting date for medium fleets is June 1, 2009. The initial reporting date for small fleets is August 1, 2009. Reports should include the following:
(A) **Owner Contact Information** – Responsible person name, corporate parent (if applicable), company or agency name, street address, phone number, email address (if available), and taxpayer identification number.
(B) **Vehicle List** – A list of each vehicle subject to this regulation along with the following information for each vehicle.
1. Vehicle type;
2. Vehicle manufacturer;
3. Vehicle model;
4. Vehicle model year;
5. Whether the vehicle is a low-use vehicle;
6. Whether the vehicle is a specialty vehicle;
7. Whether the vehicle is a dedicated emergency vehicle;
8. Whether the vehicle is a dedicated snow removal vehicle;
9. Whether the vehicle is used for agricultural operations for over half of its annual operating hours;
10. Whether the vehicle is an electric vehicle that replaced a diesel vehicle;

11. Whether the vehicle is one that the owner intends to retire within one year; and
12. For each engine that propels the vehicle, the engine manufacturer, engine family (if any), engine serial number, engine model year, engine maximum power, type of retrofit emission control equipment installed (if any), date installed, and its verification level.

(C) **Low-Use Vehicles** – For vehicles that owners intend to define as low-use, report two hour meter readings, one from on or before March 1, 2008 and one from on or after March 1, 2009, and the dates of reading. If using the three-year rolling average definition of low-use, report two hour meter readings, one from on or before March 1, 2006 and one from on or after March 1, 2009.

(D) **Specialty Vehicles** – For vehicles that owners intend to define as specialty vehicles, report demonstration, per criteria approved by the Executive Officer, that no repower is available and no used vehicle with a cleaner engine is available to serve a function equivalent to and perform work equivalent to that of the specialty vehicle.

(E) **Electric Vehicles Replacing a Diesel Vehicle** – For electric vehicles that replace a diesel vehicle, report the following information regarding the diesel vehicle replaced: vehicle type, vehicle manufacturer, vehicle model, vehicle model year, vehicle serial number, engine manufacturer, engine family (if any), engine serial number, engine model year, engine maximum power and date retired.

(2) Annual Reporting and Compliance Certification – All fleet owners must review and update the information submitted under section 2449(g)(1) annually, and submit the information in section 2449(g)(2)(A) through (C) to ARB by the reporting date of each subsequent reporting year. The large fleet reporting date is April 1, the medium fleet reporting date is June 1, and the small fleet reporting date is August 1. Large fleets must report annually each year from 2010 to 2020. Medium fleets must report annually each year 2013 to 2020. Small fleets must report annually each year from 2015 to 2025. Any fleet that fails to meet the fleet average target rate for the final compliance date in section 2449(d)(1) must continue to report annually each year until it does so. Fleets must use forms approved by the Executive Officer for submittal of the required reporting information.

(A) **Compliance Certification** – A certification signed by a responsible official or a designee thereof that the information reported is accurate and that the fleet is in compliance with the regulation. The certification must be submitted on a form approved by the Executive Officer. If a designee signs the compliance certification, a written statement signed by the responsible official designating the designee must be attached to the compliance certification and submitted to ARB. If the fleet is a Captive Attainment Area Fleet, the certification must certify that the fleet's vehicles did not operate outside the counties listed in 2449(c)(5).

(B) **Changes Since Last Reporting** – Any additions, deletions, or changes to the fleet must be reported. Such changes may include vehicles removed from

the fleet, vehicles added to the fleet through purchase or by bringing into California, vehicles newly defined as low-use or specialty vehicles, repowers, and retrofits. If there are no changes, the fleet may indicate there are no changes.

(C) **Low-Use Vehicles** –

1. Vehicles Used Only In California - For vehicles defined as low-use that operate only in California, report the hour meter readings for the last 12 months and the dates of reading. Fleets must report two hour meter readings, one from before or on March 1 of the previous year and one from on or after March 1 of the current year. If using the three-year rolling average option, fleets must report two hour meter readings, one from before or on March 1 of the first year of the three yearperiod, and one from on or after March 1 of the current year.
2. Vehicles Used In and Outside California - For vehicles defined as low-use that operate in and outside California, submit a log that contains the following information:
   a. Each date the vehicle entered California and the hour meter reading upon entry,
   b. Each date the vehicle exited California and the hour meter reading upon exit.

(3) New Fleet Reporting – New fleets must submit the information in section 2449(g)(1)(A) through (C) to ARB for vehicles subject to the regulation to ARB within 30 days of purchase or bringing such vehicles into the State. Beginning the first March 1 that is more than 30 days after the date of purchase or bringing a vehicle into the State, new fleets must comply with the annual reporting requirements in section 2449(g)(2).

(h) **Record keeping** – Fleet owners must maintain copies of the information reported under section 2449(g), as well as the records described in section 2449(h) below, and provide them to an agent or employee of the ARB within five business days upon request. Records must be kept at a location within the State of California.

(1) Changes Since Last Reporting Period - Any additions, deletions, or changes to the fleet since the last reporting.
(2) Vehicles Not Yet Labeled – For newly purchased or acquired vehicles or vehicles recently brought into the state that have not yet been labeled per section 2449(f)(2), records must be kept of the vehicle purchase date or the date the vehicle entered the state.
(3) VDECS Failure – Records of any VDECS failure and replacement.
(4) Fuel-based Strategy – Records of any approval from ARB Executive Officer to use a fuel strategy as in section 2449(e)(2).
(5) Experimental Diesel PM Control Strategy – For fleets using an experimental diesel PM control strategy, approval from the Executive Officer for use of the experimental diesel PM control strategy, the test plan and test data used in the experimental diesel PM control strategy application, etc.
(6) Manufacturer Delay – For any vehicles or VDECS for which the fleet owner is utilizing the equipment manufacturer delay provision in section 2449(e)(6), proof

of purchase, such as a purchase order or signed contract for the sale, including engine specifications for each applicable piece of equipment or vehicle.

(7) Early repowers – Fleets claiming credit for early repower under section 2449(d)(2)(A)2.a.i. shall maintain records of the date the repower was installed, the vehicle in which the repower was installed (vehicle manufacturer, vehicle model, vehicle model year, and vehicle serial number), the engine that was replaced (engine manufacturer, engine family (if any), engine serial number, engine model year, engine maximum power), and the repower engine (engine manufacturer, engine family, engine serial number, engine model year, and engine maximum power).

(8) Early Retirement - Fleets claiming credit for early turnover under section 2449(d)(2)(A)2.a.ii. shall maintain records of the vehicles that were retired including vehicle manufacturer, vehicle model, vehicle model year, and vehicle serial number. If the vehicles were sold, fleets must keep records of the sale including the date, sale price, and buyer.

(9) Record Retention – Each owner shall maintain the records for each vehicle subject to the regulation until it is retired and for the overall fleet as long as the owner has a fleet or March 1, 2030, whichever is earlier. If vehicle ownership is transferred, the seller shall convey the vehicle records to the buyer. If fleet ownership is transferred, the seller shall convey the fleet records to the buyer. Dealers must maintain records of the disclosure of regulation applicability required by Section 2449(j) for three years after the sale.

(i) **Right of Entry –** For the purpose of inspecting off-road vehicles and their records to determine compliance with these regulations, an agent or employee of ARB, upon presentation of proper credentials, has the right to enter any facility (with any necessary safety clearances) where off-road vehicles are located or off-road vehicle records are kept.

(j) **Disclosure of Regulation Applicability –** Any person selling a vehicle with an engine subject to this regulation in California must provide the following disclosure in writing to the buyer on the bill of sale, “When operated in California, any off-road diesel vehicle may be subject to the California Air Resources Board In-Use Off-road Diesel Vehicle Regulation. It therefore could be subject to retrofit or accelerated turnover requirements to reduce emissions of air pollutants. For more information, please visit the California Air Resources Board website at http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.”

(k) **Penalties –** Any person who fails to comply with the performance requirements of this regulation, who fails to submit any information, report, or statement required by this regulation, or who knowingly submits any false statement or representation in any application, report, statement, or other document filed, maintained, or used for the purposes of compliance with this regulation may be subject to civil or criminal penalties under sections 39674, 39675, 42400, 42400.1, 42400.2, 42402,.2, and 43016 of the Health and Safety Code. In assessing penalties, the Executive Officer will consider factors, including but not limited to the willfulness of the violation, the

length of time of noncompliance, whether the fleet made an attempt to comply, and the magnitude of noncompliance.

Authority and References- This regulatory action is proposed under the authority granted to the ARB in Health and Safety Code sections 39002, 39515, 39516, 39600, 39601, 39602, 39650, 39656, 39658, 39659, 39665, 39667, 39674, 39675, 40000, 41511, 42400, 42400.1, 42400.2, 42402.2, 43000, 43000.5, 43013, 43016, and 43018. This action is proposed to implement, interpret, or make specific Health and Safety Code sections 39002, 39515, 39516, 39600, 39601, 39602, 39650, 39656, 39657, 39658, 39659, 39665, 39667, 39674, 39675, 40000, 41511, 42400, 42400.1, 42400.2,, 42402.2, 43000, 43000.5, 43013, 43016, and 43018.

This Page Begins with 2449 Attachment A

Attachment A –

Use the values in these tables unless engine is a flexibility engine certified January 1, 2007 or later to the implementation flexibility standards 13 CCR 2423(d), or unless the engine is an engine certified to on-road standards. Engines certified to on-road standards should use the standard to which the engine is certified. Flexibility engines certified January 1, 2007 or later should use the emission standard to which the engine is certified. Engines certified to Family Emission Limits should still use the emission factors in the table below.

For engines that have been retrofit with VDECS, the PM Emission Factor is reduced 50 percent for a Level 2 VDECS, and 85 percent for a Level 3 VDECS; the NOx Emission Factor is reduced by whatever percentage NOx emission reductions are verified. The PM Emission Factor is not reduced for a Level 1 VDECS.

PM Emissions Factors by Horsepower and Year (g/bhp-hr)

Engine Model Year	Horsepower Group							
	25-49	50-74	75-99	100-174	175-299	300-599	600-750	Over 750
1900-1969	0.950	1.200	1.200	1.100	1.100	0.950	0.950	0.950
1970-1971	0.950	1.200	1.200	0.940	0.940	0.810	0.810	0.810
1972-1987	0.950	1.200	1.200	0.780	0.780	0.680	0.680	0.680
1988	0.950	0.980	0.980	0.540	0.540	0.490	0.490	0.490
1989-1995	0.950	0.980	0.980	0.540	0.540	0.490	0.490	0.490
1996	0.950	0.980	0.980	0.540	0.40	0.40	0.40	0.500
1997	0.950	0.980	0.980	0.600	0.40	0.40	0.40	0.500
1998	0.950	1.090	1.090	0.600	0.40	0.40	0.40	0.500
1999	0.60	1.090	1.090	0.600	0.40	0.40	0.40	0.500
2000	0.60	1.090	1.090	0.600	0.40	0.40	0.40	0.40
2001	0.60	1.090	1.090	0.600	0.40	0.15	0.40	0.40
2002	0.60	1.090	1.090	0.600	0.40	0.15	0.15	0.40
2003	0.60	1.090	1.090	0.22	0.15	0.15	0.15	0.40
2004	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.40
2005	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.40
2006	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.15
2007	0.45	0.30	0.30	0.22	0.15	0.15	0.15	0.15
2008	0.22	0.22	0.30	0.22	0.15	0.15	0.15	0.15
2009	0.22	0.22	0.30	0.22	0.15	0.15	0.15	0.15
2010	0.22	0.22	0.30	0.22	0.15	0.15	0.15	0.15
2011	0.22	0.22	0.30	0.22	0.015	0.015	0.015	0.07
2012	0.22	0.22	0.015	0.015	0.015	0.015	0.015	0.07
2013	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.07
2014	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.07
2015 and later	0.02	0.02	0.015	0.015	0.015	0.015	0.015	0.03

NOx Emissions Factors by Horsepower and Year (g/bhp-hr)								
Engine Model Year	**Horsepower Group**							
	25-49	**50-74**	**75-99**	**100-174**	**175-299**	**300-599**	**600-750**	**Over 750**
1900 – 1969	7.2	14.8	14.8	15.9	15.9	15.2	15.2	15.2
1970 – 1971	7.2	14.8	14.8	14.8	14.8	14.1	14.1	14.1
1972 – 1979	7.2	14.8	14.8	13.6	13.6	13.0	13.0	13.0
1980 – 1987	7.2	14.8	14.8	12.5	12.5	11.9	11.9	11.9
1988	7.1	9.9	9.9	9.3	9.3	8.9	8.9	8.9
1989 – 1995	7.1	9.9	9.9	9.3	9.3	8.9	8.9	8.9
1996	7.1	9.9	9.9	9.3	6.9	6.9	6.9	8.9
1997	7.1	9.9	9.9	6.9	6.9	6.9	6.9	8.9
1998	7.1	6.9	6.9	6.9	6.9	6.9	6.9	8.9
1999	6.2	6.9	6.9	6.9	6.9	6.9	6.9	8.9
2000	6.2	6.9	6.9	6.9	6.9	6.9	6.9	6.9
2001	6.2	6.9	6.9	6.9	6.9	4.2	6.9	6.9
2002	6.2	6.9	6.9	6.9	6.9	4.2	4.2	6.9
2003	6.2	6.9	6.9	4.3	4.3	4.2	4.2	6.9
2004	4.9	4.9	4.9	4.3	4.3	4.2	4.2	6.9
2005	4.9	4.9	4.9	4.3	4.3	4.2	4.2	6.9
2006	4.9	4.9	4.9	4.3	2.6	2.6	2.6	4.2
2007	4.9	4.9	4.9	2.6	2.6	2.6	2.6	4.2
2008	4.9	3.0	3.0	2.6	2.6	2.6	2.6	4.2
2009	4.9	3.0	3.0	2.6	2.6	2.6	2.6	4.2
2010	4.9	3.0	3.0	2.6	2.6	2.6	2.6	4.2
2011	4.9	3.0	3.0	2.6	1.5	1.5	1.5	2.6
2012	4.9	3.0	2.5	2.5	1.5	1.5	1.5	2.6
2013	3.0	3.0	2.5	2.5	1.5	1.5	1.5	2.6
2014	3.0	3.0	2.5	2.5	0.3	0.3	0.3	2.6
2015 and later	3.0	3.0	0.3	0.3	0.3	0.3	0.3	2.6