California Environmental Protection Agency

Air Resources Board

Final Statement of Reasons for Rulemaking

Including Summary of Comments and Agency Responses

PUBLIC HEARING TO CONSIDER PROPOSED AMENDMENTS TO THE REGULATION FOR MOBILE CARGO HANDLING EQUIPMENT AT PORTS AND INTERMODAL RAIL YARDS

Public Hearing Date: September 22, 2011
Agenda Item No.: 11-7-5

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State of California
AIR RESOURCES BOARD

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I. GENERAL

In this rulemaking, the Air Resources Board (ARB or Board) adopted amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards (CHE Regulation). The rationale for the proposed amendments is provided in the Staff Report: Initial Statement of Reasons for Rulemaking ("Staff Report"), entitled "Adoption of Proposed Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards." ARB made the 45-Day Notice of Hearing (45-Day Notice), Staff Report, and all references set forth in the Staff Report and relied upon in proposing the specified amendments to the CHE Regulation, were publicly released and made available on August 3, 2011.

The primary purpose of the amendments to the CHE Regulation is to provide additional flexibility to CHE owners/operators in complying with the regulation's requirements by reducing compliance costs while continuing to reduce emissions of diesel particulate matter (PM) and oxides of nitrogen (NO_x). The adopted amendments maintain the anticipated emissions reduction benefits of the initially adopted CHE Regulation. The amendments include several changes to the compliance requirements for meeting the regulation's in-use emission standards retrofit requirements. The amendments also include a new and modified operational compliance requirement. Several definitions have been added to the regulation to clarify and support these new and modified requirements. Additional changes were made, as needed, to provide greater clarity to the regulation and direction to affected stakeholders.

The amendments associated with retrofit-related requirements include: allowing additional time for equipment with no verified diesel emission control strategy (VDECS) available, adding a safety provision for VDECS, allowing more time for extension applications, requiring equipment with a "No VDECS Available" compliance extension to be brought into compliance within six months, and allowing compliance extensions for experimental diesel PM emissions control strategies for gathering verification data.

Amendments associated with CHE operational requirements include: implementation of a CHE opacity-based monitoring program, allowing a low-use compliance extension, allowing limited non-yard truck equipment transfers, allowing warranty engine replacement, and allowing rental of non-compliant equipment for manufacturer delivery delays.

Amendments associated with emission standards include: treating Tier 4 engines certified to Alternate PM emissions standards as Tier 3 engines and allowing demonstration of equivalency for alternative technologies.

Amendments associated with compliance requirements include: allowing compliance schedule modification to bring older engines into compliance first and exempting equipment at rural low-throughput ports.

At the September 22, 2011, several modifications to the text initially proposed in the 45-day Notice, and the Board received written and oral comments on the initially proposed and modified text. At the conclusion of the hearing, the Board adopted Resolution 11-30, in which directing the Executive Officer to incorporate the modifications into the proposed regulatory text and to make such modifications available for a supplemental comment period of at least 15 days in accordance with section 11346.8 of the Government Code. The Executive Officer was then directed either to adopt the regulations with such additional modifications as he determined to be appropriate or to present proposed changes to the Board for further consideration if he determined further Board consideration was warranted.

The modified text of the regulations was made available for a supplemental 15-day comment period by issuance of a “Notice of Public Availability of Modified Text and Availability of Additional Documents” (“15-day Notice”). The 15-day Notice, a copy of Resolution 11-30, and the document entitled “Modified Regulation Order” were made publicly available on June 15, 2012 by mail to all parties identified in section 44(a), title 1, California Code of Regulations (CCR), and to other persons generally interested in the ARB’s rulemaking concerning cargo handling equipment. The documents were also published on June 15, 2012, on ARB’s internet site and an email message announcing and linking to the 15-day Notice posting was transmitted to parties that have subscribed to “Cargo 11” and “Cargo” list serves for notification of postings pertaining to cargo handling equipment.

The 15-day Notice gave the name, telephone, and fax number of the ARB contact person from whom interested parties could obtain the complete texts of the additional documents relied upon and the modifications to the original proposal, with all of the modifications clearly indicated. The deadline for submittal of comments on the suggested modifications was Monday, July 2, 2012.

After considering the comments received during the supplemental 15-day comment period, the Executive Officer issued Executive Order R-12-009, adopting the

amendments to section 2479 in title 13, CCR. The Executive Officer also adopted findings under the California Environmental Quality Act.

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed amended regulatory text and updating information in the Staff Report. The FSOR also summarizes written and oral comments the Board received on the proposed regulatory text during the formal rulemaking process and during the 15-day Notice comment period and ARB's responses to those comments.

Documents Incorporated by Reference. The amendments approved by the Board and suggested by staff incorporate by reference the following documents:

(1) Society of Automotive Engineers (SAE) Snap-Acceleration Smoke Test Procedures for Heavy-Duty Diesel Powered Vehicles as set forth in SAEJ1667 issued February 1996;

(2) International Standard ISO 8178-4(E):1996, "Reciprocating Internal Combustion Engines – Exhaust Emission Measurement – Part 4: Test Cycles for Different Engine Applications", [August 1996];

(3) International Standard ISO 8178-2(E):1996, "Reciprocating Internal Combustion Engines – Exhaust Emission Measurement – Part 2: Measurement of Gaseous and Particulate Exhaust Emissions at Site, [August 1996]; and

(4) International Standard ISO 8178-1(E):1996, "Reciprocating Internal Combustion Engines – Exhaust Emission Measurement – Part 1: Test Bed Measurement of Gaseous and Particulate Exhaust Emission, [August 1996].

Each of these documents was listed in the 45-day Notice and included in the amended regulation as proposed. Existing administrative practice of ARB has been to have technical recommended practices, such as the above, incorporated by reference rather than printed in the California Code of Regulations. These procedures are highly complex technical documents. Because ARB has never printed these types of documents in the California Code of Regulations, stakeholders are accustomed to the incorporation format utilized in title 13, CCR, section 2479. Moreover, printing portions of the documents in the CCR when the bulk of the procedures are incorporated by reference would be unnecessarily confusing to the affected public. Additionally, the documents from SAE and ISO are copyrighted and are available only for purchase on the organizations' websites. The full documents are instead available for public inspection from the Clerk of the Board at 1001 I Street, 23rd floor, Sacramento, California 95814.

Fiscal Impacts. Pursuant to Government Code sections 11346.5(a)(5) and 11346.5(a)(6), the Executive Officer has determined, with the exception noted below, that the regulatory action will not create costs or savings to any State agency or in

federal funding to the State, costs or mandate to any local agency or school district, whether or not reimbursable by the State pursuant to Government Code, title 2, division 4, part 7 (commencing with section 17500), or other nondiscretionary cost or savings to State or local agencies. The amendments will impose a mandate on some local agencies established for the oversight of ports that also own CHE, but any costs incurred are not reimbursable under Government Code section 17500 et seq.

ARB staff evaluated the potential economic impacts on representative private persons or businesses. ARB staff estimated that while the amendments will result in both costs and savings to businesses, the overall total statewide impact on businesses will be a net cost of $2.4 to $9.8 million in 2011 dollars over the time period of 2011 to 2020, as set forth in Attachment 2 of the 15-day notice. The annual net cost ranges from $240,000 to $980,000 statewide.

The Executive Officer has determined that there will be costs to the ARB to implement and enforce the proposed amendments. The ARB's administrative costs for outreach, educational efforts, technical assistance, and enforcement would be absorbed within existing budgets and resources.

Consideration of Alternatives. Staff considered two alternatives to the proposed amendments, including: (1) to provide three additional years of extension for engines for which there are no VDECS available instead of the proposal for two additional years extension, and (2) to not require Tier 4 engines certified to Family Emissions Limits Alternative (FEL Alt) PM standards to apply highest level VDECS within one year of acquisition. For the reasons set forth in the Staff Report, the Board determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulatory action was proposed or would be as effective and less burdensome to affected private persons than the action taken by the Board.

II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL

At the September 2011 hearing, the Board directed the Executive Officer to make such additional modifications that he determined to be appropriate consistent with the initially proposed amendments as modified by staff proposed changes presented at the hearing. All substantial modifications made to the text of the regulation after publication of the 45-day Notice were circulated with the 15-day Notice for public comments. These modifications to the original proposal are discussed below.

A. Substantive Modifications to Initially Proposed Amendments

Modifications to the initially proposed amendments were made to encourage introduction and use of ultra clean technologies such as electric and hybrid equipment; ensure fleets are brought into compliance prior to granting low-use compliance extensions; provide access to the Alternative Compliance Plan provisions for both yard truck equipment and non-yard truck equipment; revise the opacity-based monitoring

program requirements to exempt newer equipment; and require additional disclosure by the sellers of equipment and engines subject to this regulation. The following sections were either modified or added.

Section 2479(d)(29): A definition for “Hybrid” was added to support modifications to section 2479(f)(2).

Section 2479(e)(1)(A)1.b.iii. and (e)(2)(A)4.: These sections were added to allow alternative power systems to be used as a compliance option in newly purchased, leased, or rented yard trucks not registered as motor vehicles.

Section 2479(e)(1)(B)4. and (e)(3)(B)1.d., 2.d., and 3.d.: These sections were modified to clarify data requirements for demonstrating that an engine or power system meets the performance requirements and to clarify for which model year standard the engine or power system must meet.

Sections 2479(e)(2)(A)5.j. and (e)(3)(A)3.k.: These sections were added to exempt equipment less than four years old from the initially proposed amendments to require opacity monitoring of in-use cargo handling equipment.

Section 2479(e)(5)(A): This section was added to clarify that, except for the case provided for in section 2479(e)(5)(B), equipment that is repowered with a replacement engine is considered to be newly purchased, leased, or rented equipment and as such must meet the requirements of section 2479(e)(1).

Sections 2479(f)(2) and (f)(2)(D): These sections were further modified to require owners or operators who request a compliance extension after the initial two annual compliance extensions to either elect to have the equipment subject to the extension request be replaced with electric or hybrid cargo handling equipment, if such equipment is available and operationally feasible for the intended use, or to have a different piece of equipment or yard truck replaced with an electric or hybrid model. In addition, if a requesting owner or operator elects to replace the piece of equipment specifically subject to extension request, language was added that would require, in certain circumstances, for the owner or operator to install a safe and feasible VDECS if one becomes available. The owner or operator would not be required to install the VDECS if it is certain that the equipment will be replaced with electric or hybrid equipment at the end of the final extension period or if the owner or operator has replaced or will replace a secondary piece of equipment with electric or hybrid equipment.

Section 2479(f)(2)(B): Section 2479(f)(2)(B) has been further modified to specify that if during the first two years of a compliance extension a VDECS becomes commercially available for the engine that has been granted a compliance extension, then the owner or operator must install the VDECS or otherwise comply with subsection (e)(3).

Section 2479 (f)(2)(C): Section 2470(f)(2)(C) was added to restrict equipment from qualifying for more than two compliance extension years if a VDECS cannot be applied solely because of high engine exhaust opacity.

Section 2479(f)(3): This section was modified to allow the compliance extension for the use of experimental diesel particulate matter emission control strategies to apply to yard truck, as well as non-yard truck, equipment.

Section 2479(f)(6)(A): This section was modified to make Executive Officer approval of the low-use compliance extension contingent upon an owner or operator bringing into compliance all applicable non-yard truck equipment in its fleet for which compliance is feasible.

Section 2479(h): This section was modified to encourage the use of electric and hybrid yard trucks and non-yard truck equipment by allowing hybrid technology and electrification to be considered as alternative emission control strategies and by expanding the provision to allow cargo handling equipment owners and operators to include yard trucks, as well as non-yard truck equipment, in Alternative Compliance Plans.

Section 2479(j)(3)(F): This section was modified to require an owner or operator to include information in their annual report about any electric or hybrid equipment purchased in response to extension requirements.

Section 2479(p): This section was added to require any person selling an engine certified to the alternate Tier 4 family particulate matter emission limits either as part of a piece of cargo handling equipment or as an independent engine that will be used in cargo handling equipment, to disclose to the buyer that the engine is subject to retrofit requirements of the CHE Regulation.

B. Nonsubstantive Modifications to Initially Proposed Amendments and Additional Documents Added To the Record

Staff also made minor, non-substantive, modifications throughout the regulatory text provided with the 15-day Notice to provide additional clarity. These include the following:

Section 2479(c)(3)(A) and (e)(5)(B): The initially proposed amendment that would allow an engine that has failed during its warranty period to be replaced with an engine meeting the emission standards of the warranted engine rather than those dictated by the standards required for newly purchased, leased, or rented equipment was moved from section 2479(c)(3)(a) to section 2479(e)(5)(B).

Other non-substantive changes included correcting formatting and grammatical errors, and minor administrative changes and corrections.

In the 15-day Notice, staff identified and corrected several typographical errors and other minor corrections in some of the references that were listed in the ISOR. For clarity, the following identifies these errors and the necessary corrections.

1. In the Master Reference List for the Proposed Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, on page 6

(Appendix B), reference 45. reads, 'Port of Long Beach (POLB), "Port of Long Beach Container Statistics-2010,"' should read, 'Port of Long Beach (POLB, 2011), "Container Trade in TEUs," 2011.'

2. In the Master Reference List for the Proposed Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, on page 6 (Appendix B), reference 48. is identified incorrectly as, 'U.S. Environmental Protection Agency (USEPA), "NONROAD Model (nonroad engines, equipment, and vehicles)", 2004.' The correct reference is, 'U.S. Environmental Protection Agency (USEPA), "Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition," EPA420-P-04-009, NR-009, April 2004.'

3. In the Master Reference List for the Proposed Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, on page 8 (Appendix C), reference 58., California Council on Diesel Education and Technology (CCDET, 2011) is dated June 2011. The actual date is July 2011.

4. In the Master Reference List for the Proposed Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, on page 8 (Appendix C), reference 62., CARB Compliance Services, smoke Testing Pricing Information (CCS, 2011) is dated May 2011. The actual date is August 2011.

5. In the Master Reference List for the Proposed Amendments to the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, on page 8 (Appendix C), reference 63., the reference is identified as "California Air Resources Board (ARB)" and should be identified as California Air Resources Board (ARB, 2011l)."

Additional reference documents were identified and added to the rulemaking record as part of the 15-day Notice. These documents were identified in "Attachment 2, Potential Economic Impacts of Modifications to the "No VDECS Available" Compliance Extension for Mobile Cargo Handling Equipment Operating at Ports and Intermodal Rail Yards". The documents were made publicly available as part of the 15-day Notice and posted on the ARB's website at the following link: http://www.arb.ca.gov/regact/2011/cargo11/cargo11.htm.

C. Non-substantial or Solely Grammatical Modifications Made After the Close of the 15-Day Comment Period

In addition to the modifications described above, the following non-substantial correction was made after the close of the 15-day comment period. The references to the definitions for "mobile cranes" and "sweepers" on page 2 were corrected from (d39) to (d40) and from (d)(63) to (d)(64), respectively, to reflect changes in definition numbering due to the addition of a definition as part of the 15-day modifications. The numeral for the added definition for "safe" on page 9 was not underlined, although the added

definition was underlined to indicate that it was proposed new language. The error has been corrected in the Final Regulation Order and the numeral is now shown underlined. The verb tense in subsection (e)(3)(B)1.d.(ii) on page 23 was corrected from present tense, “conducts”, to past tense, “conducted”. The numerals “6” and “7” had been added to the regulatory language for the 15-day modifications on page 34 but were erroneously not double-underlined to show their addition. The listed items following these numerals were double underlined in the 15-Day Notice to indicate that it was proposed new language. This error has been corrected in the Final Regulation Order, and the numerals are now shown underlined in the regulatory text.

III. SUMMARY OF COMMENTS AND AGENCY RESPONSES TO THE ORIGINAL PROPOSAL

The Board received both written and oral comments during the formal 45-day rulemaking comment period, which began on August 8, 2011, and ended on September 22, 2011, the date of the Board hearing.

ARB received written and/or oral comments in support of the regulation or the rulemaking process from the following persons:

Will Barrett, American Lung Association (Oral)
Bonnie Holmes-Gen, American Lung Association (Written)
Bob Phipps, Bettendorf Trucking (Written and Oral)
Luis Cabrales, Coalition for Clean Air (Written and Oral)
Angelo Logan, East Yard Communities for Environmental Justice (Written)
Gisele L. Fong, PhD, EndOil/Communities for Clean Ports (Written)
Gary Ryerson, Green Diamond Resources (Oral)
Rasto Brezny, Manufacturers of Emissions Control Systems (Written and Oral)
Diane Bailey, Natural Resources Defense Council (Written)
Theresa Livingston, Sierra Pacific Industries (Written and Oral)
Henry Hogo, South Coast Air Quality Management District (Written and Oral)

The comments provided in support of the regulation amendments are not separately summarized and responded to in this FSOR.

Written comments were also provided by the persons identified below. Following the list is a summary of each objection or recommendation made regarding the proposed action and staff’s suggested modifications to the proposed amendments presented at the September 22, 2011 Board hearing, together with an explanation of how the proposed action has been changed to accommodate the objection or recommendation or the reasons for making no change. The comments have been grouped by topic.

Comments Received During the 45-day Comment Period
(Excluding Statements in Support of the Regulation)

Abbreviation	Commenter
ALA	American Lung Association Bonnie Holmes-Gen Written Testimony: September 21, 2011
ALA1	American Lung Association Will Barrett Oral Testimony: September 22, 2011
APL	APL/Eagle Marine Robert Clark Written Testimony: September 19, 2011
BNSF	BNSF Railway Ryan Mills Written Testimony: September 21, 2011
CCA	Coalition for Clean Air Luis Cabrales Written Testimony: August 23, 2011
CCA1	Coalition for Clean Air Luis Cabrales Written Testimony II: September 21, 2011
CCA2	Coalition for Clean Air Luis Cabrales Oral Testimony: September 22, 2011
CRI	The California Railroad Industry Kirk Markwald Written Testimony: September 22, 2011
CRI1	The California Railroad Industry Darcy Wheeles Oral Testimony: September 22, 2011

DoD	Department of Defense C.L. Stathos Written Testimony: September 12, 2011
DoD1	Department of Defense Randal Friedman Oral Testimony: September 22, 2011
EYCEJ	East Yard Communities for Environmental Justice Jocelyn Vivar Ramirez Written Testimony: August 23, 2011
EYCEJ1	East Yard Communities for Environmental Justice Angelo Logan Written Testimony II: September 21, 2011
EO/CCP	EndOil/communities for Clean Ports Gisele L. Fong, PhD Written Testimony: September 21, 2011
ITS	International Transport Services, Inc. Gary Dalton Written Testimony: September 19, 2011
MECA	Manufacturers of Emission Controls Association Joseph Kubsh Written Testimony: September 19, 2011
MECA1	Manufacturers of Emission Controls Association Dr. Rasto Brezny Oral Testimony: September 22, 2011
MAHA	Medical Advocates for Healthy Air Kevin D. Hamilton Written Testimony: August 23, 2011

MSC	Metropolitan Stevedore Company Craig Kappe Written Testimony: September 6, 2011
MSC1	Metropolitan Stevedore Company Craig Kappe Oral Testimony: September 22, 2011
NRDC	National Resources Defense Council Diane Bailey Written Testimony: August 23, 2011
NRDC1	National Resources Defense Council Diane Bailey Written Testimony II: September 21, 2011
PMA	Pacific Maritime Association Gerald M. Swanson Written Testimony: September 19, 2011
PMSA	Pacific Merchant Shipping Association T.L. Garrett Written Testimony: September 20, 2011
POLB	Port of Long Beach Richard Cameron Written Testimony: September 21, 2011
SSI	Schnitzer Steel Industries Melissa Cohen Written Testimony: September 21, 2011
SCAQMD	South Coast Air Quality Management District Barry Wallenstein Written Testimony: September 21, 2011
SCAQMD1	South Coast Air Quality Management District Henry Hogo Oral Testimony: September 22, 2011

SSA	SSA Marine Stephen Clark Written Testimony: August 29, 2011
SSA1	SSA Marine Stephen Clark Oral Testimony: September 22, 2011
UP	Union Pacific Railroad Lanny Schmid Written Testimony: September 20, 2011
YT	Yusen Terminals Inc., Port of Los Angeles Linda Frame Written Testimony: September 20, 2011
YT1	Yusen Terminals Inc., Port of Los Angeles Tom Szwajkos Written Testimony: September 22, 2011
YT2	Yusen Terminals Inc., Port of Los Angeles Tom Szwajkos Oral Testimony: September 22, 2011

A. General Comments

A1. Comment: We believe these amendments are not yet sufficiently balanced and should undergo further development before being formally heard by the Air Resources Board. We respectively ask that consideration of these amendments be delayed until the amendments can be modified to address the important pollution reductions that are untapped in the current version. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: The "untapped" pollution reductions mentioned in the comment refer to modifying the regulation to facilitate the introduction and use of zero and near-zero CHE at California's ports and intermodal rail yards. In order to facilitate the use of zero and near-zero CHE at ports and rail yards, provisions were added to the regulation in the 15-day modifications to require the replacement of non-compliant CHE with electric or hybrid models, if available, as a condition for obtaining third and fourth years of a "No VDECS Available" compliance extension. Other sections modified in the 15-day modifications provide more opportunities to introduce electric or hybrid CHE into the fleets included adding zero and near-zero CHE options to the list of technologies to be considered for alternative compliance plans and allowing yard trucks to be included as equipment involved in alternative compliance plans. Consequently, with the addition of these 15-day modifications, staff did not believe it was necessary or appropriate to delay the consideration of the proposed amendments.

A2. Comment: We acknowledge the fact that ARB staff has worked vigorously to address concerns from CHE owners/operators. However, we feel that the amendments to accommodate industry will create more pollution among the many California communities already impacted by intermodal rail yards and port terminals activities. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: The amendments provide both more flexibility to industry as well as protect the emissions reductions provided by the original regulation. In proposing the amendments, ARB staff evaluated the potential emissions impacts associated with the amendments, including the additional years of compliance extensions, in the Initial Statement of Reasons (ISOR). To mitigate these potential emission impacts, ARB added 15-day modifications to the proposed amendments, described in the response to Comment A1 above, to address the commenter's concerns. As discussed in the response to Comment A1, these provisions were added to facilitate the introduction of electric and hybrid equipment into port and intermodal rail yard CHE fleets. The modifications effectively mitigate the minimal PM emissions impacts of the amendments.

The initially proposed amendments would have resulted in a small delay in NOx emission reductions from 2012 through 2016 compared to the reductions estimated in the originally adopted 2006 rulemaking. These emissions have been partially offset by the 15-day modifications referred to above. The overall emissions impacts of the amendments resulted in a small (0.37 tpd) net increase in NO_x relative to the emission

reduction estimates in the original regulation but does not impose any significant effect on the environment based on the environmental conditions existing on August 3, 2011, the date the environmental analysis in the Staff Report was published. Additionally, the identified delay in emissions reductions has been effectively offset by voluntary early compliance of fleets at ports and intermodal rail yards between 2007 and February 21, 2012, the date that EPA granted California authorization to enforce the CHE regulation emission standards. It is estimated that early compliance has resulted in 2.9 tons per day (tpd) of NO_x reductions. These reductions far outweigh the emissions delays due to the amendments.

A3. Comment: As the economy continues to improve and operators need to replace retired equipment, CARB should seize the opportunity to shape equipment modernization toward the purchase of the cleanest available technology. Unless CARB sets a strong guideline to move away from diesel-based technologies, industry will go for the minimum requirement to achieve only the emissions standards required by the rule. Staff needs to set stronger emissions guideline that will help CARB and regional and local government agencies achieve their GHG emissions reductions per the Scoping Plan Goals. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: The Administrative Procedures Act, which governs ARB's regulatory process for adopting regulations, directs ARB to adopt performance based standards when possible rather than prescriptive standards. Consequently, our CHE regulation sets a standard by which the regulated community must comply but does not specifically direct the compliance method. It should also be noted that this regulation is one of several mechanisms that are available to reduce emissions from CHE. Local air quality management and air pollution control districts, local planning and zoning agencies, ports, and incentive funding all can play a significant role in moving us toward zero and near-zero technologies. Please also see the response to Comment A1 regarding the provisions added to the regulation in the 15-day modifications to encourage the use of new electric and hybrid equipment.

For example, there are various ARB incentive programs which are devised to promote the demonstration and commercialization of new cleaner technologies. Specifically, the Air Quality Improvement Program (AQIP), established by the California Alternative and Renewable Fuel, Vehicle Technology, Clean Air, and Carbon Reduction Act of 2007 (Assembly Bill (AB) 118, Statutes of 2007, Chapter 750), is a voluntary incentive program administered by the Air Resources Board (ARB or Board) to fund clean vehicle and equipment projects, research on biofuels production and the air quality impacts of alternative fuels, and workforce training. Additionally, the Carl Moyer Program is a voluntary incentivize program administered by the local air districts to fund projects that result in emission reductions that are above and those required by direct regulation. These programs help incentivize the introduction and use of the cleanest available equipment.

Additionally, the CHE regulation is a diesel PM regulation which focuses its emission reduction strategies on reducing the public's exposures to diesel engine exhaust. ARB

staff has provided CHE owners/operators with a number of compliance pathways that encourages the selection of a strategy to meet the emissions reduction requirements set forth in the regulation and includes GHG emissions reductions, but GHG emissions reductions are not a primary focus of this regulation.

A4. Comment: Regarding the amendment clarifying that equipment brought onto a port terminal or intermodal rail yard solely for construction or unexpected repairs are exempt from the CHE Regulation, SSI supports this clarification and it is consistent with our statement that the CHE Regulation should only control emissions from equipment that handles "cargo". … The CHE rule should only control the emissions from equipment that handles "cargo" at a port; and the Off-Road rule should control the emission from equipment used at non-port facilities. For SSI Oakland, the equipment used in the designated terminal should be covered by the CHE rule, and equipment used in the scrap metal manufacturing facility should be covered by the Off-Road Rule. (SSI)

Agency Response: The equipment that the regulation applies to was specified in the CHE Regulation as adopted in 2005. The amendments clarified this provision. As defined by section 2479(b) and (d)(9) of the CHE Regulation, the equipment operating at the commenter's facility is not related to construction projects or unexpected repairs and the facility is within the designated port. As such, the commenter's equipment is subject to the CHE Regulation and would not be exempt from the CHE Regulation.

A5. Comment: SSI believes that our costs to purchase new equipment, to purchase and install retrofit VDECS, to test retrofit equipment, to operate retrofit equipment, and to perform opacity testing will be significantly higher than what CARB has stated and the costs will place us at a competitive disadvantage within our industry. Furthermore, if SSI is forced to replace Tier 3 technology ahead of its useful life, costs will increase even further. Finally, since there have been no significant VDECS developments in the last four years, and we don't expect VDECS will be developed in the next few years, it may become necessary to purchase new equipment in situations where CARB staff estimated that costs could be minimized through the installation of retrofit technology. (SSI)

Agency Response: Costs associated with purchasing new equipment and retrofitting existing equipment were part of the initially adopted regulation in 2006 and are not subject to economic analysis here. The basis of ARB staff's estimates on the cost of the opacity monitoring program is provided in Appendix C of the ISOR. As documented in the references, staff depended on information provided by ARB staff currently performing and studying opacity monitoring as well as information from industry sources performing such monitoring.

The commenter expresses concern that they will need to replace Tier 3 technology before the end of its useful life. The commenter is referring to newly purchased equipment. The CHE Regulation does not require Tier 3 technology to be replaced or repowered. Newly purchased equipment with Tier 3 engines are required to be

retrofitted with the highest level VDECS available. However, if a VDECS is not available for this newly purchased Tier 3 equipment, there are no requirements to either obtain extensions or replace the equipment.

A6. Comment: In addition, with appropriate amendments, the regulation can also serve as a backstop should the actions being taken to have the Class I railroads commit to additional PM emission reductions at the four rail yards in the South Coast Air Basin do not come to fruition or if the Class I railroads do not meet such commitments in the future. (SCAQMD, SCAQMD1)

Agency Response: This comment is not responsive to the amendments in this rulemaking and therefore no response is needed.

B. "No VDECS Available" Compliance Extension

B1. Comment: We are requesting the ARB to define the scope of "if available" in terms of technical and economic feasibility when evaluating the availability of electric or hybrid equipment as well as allow for other technologies besides only electric and hybrid equipment. BNSF believes that the technological feasibility of an electric or hybrid application for rubber tired gantry (RTG) cranes is currently unproven. BNSF is concerned with committing scarce capital towards equipment replacements without adequate understanding of the performance of the equipment and its interaction with our current operation. Implementing newer technologies without data on technical feasibility and operational success could compromise intermodal operations. (BNSF)

This proposal must consider the applicability and cost of available electric or hybrid equipment at the time the extension expires. Tests of heavy-duty battery-powered electric equipment in a real time marine terminal operation have not, to date, been successful. Grid powered electric equipment requires very substantial capital investment in electrical infrastructure as well as lengthy permitting and construction processes which could make an electric option impractical if a grid based power supply does not already exist. In the event that neither a hybrid nor electric option is available, the equipment operator needs a viable diesel option. (YT)

We have concerns regarding how "availability" of electric and hybrid equipment would be determined. While electric and/or hybrid equipment may be commercially available, they may not be suitable for use at an intermodal facility. Also, the requirement is prescriptive and removes the operator's flexibility to choose the compliance option that best fits their operations; such as repowering of the equipment with the then-currently available Tier engines. (UP)

Agency Response: The 15-day modifications added requirements to replace non-compliant equipment with electric or hybrid models, where available, in order to qualify

for third and fourth years of the "No VDECS Available" compliance extension. Included in the language are the caveats that the technology must be "commercially available, technically feasible giving consideration to cost, or operationally feasible for the intended use for the application for which the extension is granted." These requirements were added to promote the introduction of zero and near-zero technologies into the CHE fleets at ports and intermodal rail yards. Additionally, in the Board resolution, the Board directed ARB staff to conduct a comprehensive assessment of zero-emission cargo handling equipment technologies including, but not limited to, the associated costs, cost-effectiveness, and feasibility. An evaluation of infrastructure costs will be included in this assessment. ARB staff has initiated this assessment. As documented in the Attachment 2 of the 15-day modifications, our first initial assessment has determined that electric and hybrid equipment are currently available for only a limited array of CHE, primarily yard trucks, small forklifts, and RTG cranes. The full assessment is anticipated to be completed by the end of 2012 or early in 2013. Finally, CHE owners/operators can choose not to apply for these additional years of "No VDECS Available" Compliance Extension if they are apprehensive about investing in electric or hybrid equipment.

B2. **Comment:** As drafted, the ISOR does not include an assessment of technologies available to replace the equipment affected by these amendments. Staff needs to show that the equipment that will be exempted or given two more years to update with retrofits cannot be replaced with equipment currently available in the market. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: See response to Comment A1 regarding the provisions added to the regulatory language in the 15-day modifications to require, in association with the third and fourth years of "No VDECS Available" compliance extension, the replacement of non-compliant equipment with electric or hybrid models, if available. See response to Comment B1 regarding staff completing a technology assessment.

B3. **Comment:** CARB needs to address the rapidly-growing market of zero emissions and hybrid CHE. The rule amendments should promote and acknowledge the recent and rapid development of zero emissions and hybrid technology for cargo handling equipment, especially where VDECS are purportedly ineffective or unavailable. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: See response to Comment A1 regarding the provisions added to the regulatory language in the 15-day modifications to require, in association with the third and fourth years of "No VDECS Available" compliance extension, the replacement of non-compliant equipment with electric or hybrid models, if available. Also see the response to Comment A3 which identifies the role other entities play in the move to zero and near-zero technology, and the response to Comment B1 regarding ARB's commitment to conduct a technology assessment.

B4. **Comment:** Adding extensions to the current two year maximum annual "No VDECS Available" compliance extension for in-use non-yard truck equipment –

while the emissions created by this extension may be relatively small, we are concerned about the cumulative impacts that these and other regulations' amendments will have on fence line communities. (CCA, EYCEJ, MAHA, NRDC)

Staff needs to provide a cumulative impacts report taking into account the excess emissions created from amendments to this regulation and the emissions created from other diesel regulations amended in the past few years. This cumulative impacts assessment should include the following regulations' amendments:

- Statewide Truck and Bus (December 2010),
- Off-road Equipment (December, 2010),
- Ocean-going Vessel Fuels (June, 2011),
- Transportation Refrigeration Units (TRUs) (November, 2011)
- Cargo Handling Equipment (September, 2011), and
- Any other recent or proposed amendment to regulations related to diesel engines.

(CCA, EYCEJ, MAHA, NRDC)

Agency Response: The potential emissions impacts associated with adding two years to a CHE owner/operator's "No VDECS Available" compliance extension has been evaluated and the results of that evaluation were presented in the ISOR for the proposed amendments to the CHE regulation. The overall emissions impacts of the amendments resulted in a net decrease in diesel PM and a small (0.37 tpd) net increase in NO_x relative to the emission reduction estimates in the original regulation but does not impose any significant effect on the environment based on the environmental conditions existing on August 3, 2011, the date environmental analysis in the Staff Report was published. As discussed in the response to Comment A2, the identified NO_x impact has been effectively offset by voluntary early compliance of fleets at ports and intermodal rail yards between 2007 and February 21, 2012, the date that EPA granted California authorization to enforce the CHE regulation emission standards. It is estimated that early compliance has resulted in 2.9 tpd of NO_x reductions. These reductions far outweigh the 0.37 tpd NO_x emissions delays due to the amendments. Additionally, the modifications to the regulation made since the ISOR was released to the public have further mitigated these minimal emissions impacts.

ARB has determined that the CHE Regulation amendments will not cause an increase in PM or NO_x emissions that will have a significant adverse impact to the environment. Early compliance and the 15-day modifications effectively mitigate any significant adverse impact attributable to cargo handling equipment, as noted above and in the response to Comment A2. The Board previously found that recent amendments to the Truck and Bus and In-Use Off-Road regulations did not result in a significant environmental impact. Furthermore, the 2010 amendments to the Drayage Regulation resulted in greater NO_x reductions and the 2011 amendments to the Ocean-going Vessel Fuel Regulation amendments resulted in greater PM emission reductions, than what would have occurred without the amendments, not fewer. The additional reductions due to these amendments occur largely in and around port and intermodal rail yards. The 2010 TRU amendments, which is statewide in its impact and not

localized in and around the ports and intermodal rail yards, resulted in small delays in PM reductions totaling 0.2 tpd. These small increases from the TRU amendments were considered to have been offset by the early emissions reductions achieved through early compliance with the regulation, considered surplus because ARB did not receive authorization from USEPA to enforce until January 2009.

B5. **Comment:** While SSI supports CARB's proposed additional two year extension for in-use non-yard truck equipment for which there are not VDECS available, we are concerned that an additional two years will not be sufficient. SSI has been working with multiple VDECS vendors for over four years in the hope that feasible VDECS technology would be developed, but so far it has not. Furthermore, we purchased new Tier 3 technology per the requirements of the CHE rule, and a significant portion of our Tier 3 fleet is unlikely to have retrofits available within the next two years due to the need for significant changes in the engine compartment design for non-yard tuck equipment.

CARB should amend the CHE rule and assure the CHE fleet operators that if they can purchase Tier 3 equipment per the requirements of the rule, then the operator can continue to operate that equipment until a safe VDECS retrofit technology is proven for their specific equipment, under their specific operating conditions, at their specific duty cycle – and all under warranty. The retrofit requirements of the amended CHE rule should allow for annual compliance extensions until VDECS becomes available – and not limit the number of extensions. (SSI)

Agency Response: The "No VDECS Available" compliance extension is in reference to compliance requirements for in-use equipment. For in-use equipment, retrofitting with highest level VDECS is one of several compliance paths available. If VDECS is not available for equipment, other compliance options include repowering the equipment with the cleanest available engine, replacing the equipment with equipment with the cleanest available engine, or retiring the equipment.

Newly purchased equipment with Tier 3 engines are required to be retrofitted with highest level VDECS *available*. If a VDECS is not available, there are no requirements to either obtain an extension or replace the equipment. So use of this Tier 3 equipment is not limited by the number of years of compliance extensions available. The operator may continue to operate the equipment until a safe and feasible VDECS becomes available for their newly purchased Tier 3 equipment.

The ARB Verification Procedure requires that VDECS go through extensive testing which delineates the duty cycle requirements for safe effective operation. These duty cycle requirements, as well as the equipment applications, are specified in the executive order that is issued when the emission control device is verified. The testing requirements include 1,000 hours of durability testing of the emission control device to determine if can be safely operated with specific equipment, under specific operating conditions, at specific duty cycles. In addition, the Verification Procedure requires an

applicant to complete a field demonstration of their product before it can be verified. The field test is designed to demonstrate that an applicant's diesel emissions control strategy works with the designated engine duty cycle and application in actual field conditions. The ARB Verification Procedure also provides for warranty of the VDECS.

B6. **Comment:** For a piece of equipment which has been granted a "No VDECS Available" compliance extension, to the extent VDECS fail to materialize and are not available within this window (third and fourth years), we encourage you to consider language that makes an additional extension automatic. (SSA)

Agency Response: As new aftertreatment control technologies become verified, CHE owners/operators need to evaluate whether those technologies will work with their equipment. Additionally, language added as part of the 15-day modifications has imposed additional requirements that the owners/operators must agree to in order to obtain a third and fourth year compliance extension. These modifications make additional years of extension contingent upon the fleet owner/operator agreeing to replace non-compliant equipment with electric or hybrid models if such equipment is available. These changes preclude automatically granting additional years of "No VDECS Available" compliance extension because they require the owners/operators to evaluate if they wish to commit to the requirements prior to applying for the additional extension years.

B7. **Comment:** The requirements that a CHE owner/operator must meet to be granted an additional two years of a "No VDECS Available" compliance extension limit BNSF to replacing many of our RTG cranes with only electric or hybrid system if we obtain these extensions. We request that the language be amended to allow other repower options such as Tier 4 engines, which BNSF is considering. (BNSF)

Agency Response: The requirements are intended to support the introduction of electric or hybrid CHE in the terminal and intermodal rail yard fleets. ARB staff recognizes that there are limited electric and/or hybrid equipment options for owners/operators of specific types of equipment. As part of the 15-day modifications, language was added to address this issue and is discussed in the response to comment B1. In addition, RTGs can currently be retrofitted with VDECS or repowered to Tier 4. ARB staff does not anticipate granting RTG cranes additional years of "No VDECS Available" extensions.

B8. **Comment:** We strongly support limited compliance extensions for old equipment with high engine out particulate for which no exhaust controls are available. (ALA, CCA1, EO/CCP, EYCEJ, NRDC)

Agency Response: As part of the 15-day modifications, language was added to put into place additional limits for old equipment with high engine out particulate. This added language limits "No VDECS Available" extensions to the original two years of

extension for engines for which excessive engine exhaust opacity is the only reason a VDECS cannot be installed.

B9. Comment: The revision of the requirements to qualify for the third and fourth year of "No VDECS Available" extension that would require cleaner engines or similar to allow us to use that equipment took away a window of opportunity for us in Stockton. (MSC1)

Agency Response: See response to Comment A1 regarding the reasons why this 15-day modifications language was added. These revisions require that equipment operators agree to replace non-compliant CHE with electric or hybrid models if commercially available and technologically feasible, with consideration to cost.

C. Technology Availability

C1. Comment: It is the consensus of all terminal operators that existing VDECS technology does not fit our operations evidenced by the premature regeneration problems associated with the VDECS such as burned out glow plugs and other electrical issues. These are just a few of the continuing mechanical/software problems we face. An extension for verified device testing and availability would allow time for issues to be presented and addressed. (PMA)

CHE owners/operators should not be required to adjust, set-aside, or re-engineer very expensive and mission-critical equipment in order for manufacturers to continue to bring their products up to the operational emissions standards of the State and Port of Long Beach (POLB). It is our position that manufacturers have prematurely introduced products into the market in a rush to obtain market share when in fact many of these emissions control products have not been fully vetted within the marine terminal environment. It is our position that additional funding must be made available and additional time allotted to both marine terminals and manufacturers for achievement of requisite real-world compliance and performance testing. To date this has not been the case. (ITS)

Regarding VDECS retrofits, our experience is that VDECS manufacturers are rushing into the market without first demonstrating the viability and durability of their product in our working environment. SSI cannot be expected to pay for un-tested equipment and then serve as the testing ground for new technology. Such activity will place us at a competitive disadvantage within the industry. (SSI)

Agency Response: ARB's Regulation for the Verification Procedure for In-Use Strategies to Control Emissions from Diesel Engines, California Code of Regulations, Title 13, Division 3. Chapter 14, sections 2700 through 2711, requires a stringent regiment of testing, including both emissions tests and 1,000 hours of durability testing as well as 200 hours of field testing prior to a diesel emission control strategy (DECS) obtaining verification for an off-road application. This testing must provide sufficient information to determine the engines the verification is applicable to as well as the duty

cycle. Each verified device must pass both durability and field testing prior to receiving ARB verification. If equipment owners/operators experience operational issues with VDECS, ARB staff is available to help determine the cause and remedy. As discussed in Chapter II of the ISOR, ARB staff conducted a CHE technology meeting in May, 2011. This was a forum for VDECS manufacturers and equipment owners/operators to discuss VDECS issues and solutions. ARB staff has committed to conducting additional meetings in the future.

As discussed in Chapter II of the ISOR, many owners/operators feel that their equipment duty cycles are not amenable to retrofit with VDECS due to the large amount of idling that occurs during vehicle operation as well as the accompanying low exhaust temperature. However, active diesel emission control strategies can be used with a wide range of engine duty cycles because the device monitoring system detects when regeneration is needed and initiates it.

ARB has partnered with CHE owners/operators to demonstrate DECS at California's port and intermodal rail yards. Grants were offered to CHE owners/operators to fund the installation of CHE-specific retrofit technologies for the purposes of using the resulting performance information to pursue ARB DECS verification for that technology.

C2. **Comment:** CARB should not verify VDECS technology until it has been demonstrated on the same equipment we operate and under our type of working environment. Anything less is simply an undue burden on our company. (SSI)

Agency Response: Please see response to Comments B5 and C1 regarding the ARB Verification Procedure and how it relates to equipment operating at a marine terminal.

C3. **Comment:** ARB needs to require additional duty cycle testing in the field before approval of an emissions device. Cummins, with all their engineering resources, had issues with the USEPA 2007 engine. Any point in time, I had 16 to 22 pieces of equipment out of service when we went over to the on-road engine. I'm expecting the same issues with the 2011 USEPA engine. (YT)

There have been issues associated with CHE equipment powered by engines certified to the USEPA 2007 non-road emissions standards operating in CHE engine duty cycles. One commenter has experienced a 25 percent failure rate for these engines and they continue to work on those engines. It is anticipated that the same will be true when engines certified to the USEPA 2011 non-road emissions standards are introduced in the CHE population. (SSA1, YT2)

Agency Response: As discussed in Chapter II of the ISOR, ARB staff conducted a CHE technology meeting in May, 2011. During the course of that meeting, one of the issues discussed was the compatibility of the on-road engines yard truck CHE are powered by. Representatives of the engine manufacturing firm that supplies the engines for yard trucks was at that meeting. As discussed in the ISOR, the engine manufacturer representatives have worked with CHE owners/operators since that

meeting to resolve engine performance issues through improved maintenance practices, engine software updates, and an exhaust pipe replacement, and have made commitments to continue to work with CHE owners/operators to resolve any future issues. The findings from the Cummins representative indicated that he found multiple causes for the operational problems and suggested maintenance practices and upgrades to deal with the different issues. One of the fundamental issues was that some yard truck operators were not providing necessary maintenance, primarily related to the DPF regeneration. This maintenance is necessary for successful operation and, if neglected, can result in a myriad of service problems.

C4. **Comment:** ARB needs to require additional duty cycle testing in the field before approval of an emission device. We suggest that ARB extend a "shake down" period for new VDECS when they come onto the market. This would for allow additional time to work out any problems that may occur when new equipment is first put into service as is frequently the case. (PMSA, YT2)

Agency Response: Please see the response to Comment C1 regarding the ARB Verification Procedure and the extensive testing required for ARB Verification. The ARB Verification Procedure also requires VDECS manufacturers to work closely with CHE equipment owners/operators to determine if available VDECS have applicability to the equipment to be retrofitted.

C5. **Comment:** ARB expects small diesel particulate filter (DPF) manufacturers with limited resources to design and build a piece of equipment, a DPF, and it works well in the laboratory environment, but when you put in our environment, it fails miserably. All we are asking is a consistent level playing field in this regulation. (YT2)

Agency Response: While some companies that manufacture VDECS are "small manufacturers," many of them are international, multi-million dollar corporations that have been in the business of developing and manufacturing DPFs for many years. Please see the response to Comment C1 regarding the testing required for an emission control device to become ARB verified, including field testing. The ARB Verification Procedure also requires VDECS manufacturers to work closely with CHE equipment owners/operators to determine if available VDECS have applicability to the equipment to be retrofitted.

C6. **Comment:** If SSI needs to first evaluate a new technology under real-world operating conditions, then the 6 month period to bring equipment into compliance if VDECS becomes available is too short and should be extended to 1 year. Given the poor past performance of VDECS retrofits on SSI's and similar equipment, SSI cannot be expected to retrofit a fleet of equipment until it is certain that the technology will work in a cost-effective manner. (SSI)

Agency Response: Please see responses to Comments C1 and C4 regarding responses to the issue that owners/operators do not believe that VDECS are verified for

their operating environment, the extensive testing requirements of the ARB Verification Procedure, and the Verification Procedure requirement that VDECS manufacturers work closely with CHE owners/operators to determine VDECS applicability. Six months is adequate time to determine if a VDECS can be used with certain equipment.

C7. **Comment:** I got this from ARB yesterday (a letter). It says you may experience catastrophic failure in this system (Cleaire Allmetal). I just spent 40 grand on it. This has been approved by CARB and gone through the whole deal. And now I've got – I'm stuck with this junk. This is the latest and greatest and the best system out there. Now what do I do? (SSA1)

Agency Response: ARB staff is currently reviewing the application for verification of the Cleaire Allmetal system. Like the LongMile system, its on-road counterpart, the Allmetal system must undergo design modifications before being redeployed. The LongMile system has already been successfully modified, verified, and put back into service. The situation for the Allmetal system is more involved because in addition to the design modifications, it must also move from its conditional verification status to full verification. ARB staff has asked SSA if they wish to remove the VDECS and the response was that it was working well and they preferred to keep the VDECS on the equipment. If SSA determines that they wish to remove the VDECS, per subsection (g)(1), in cases of VDECS failure, the owner/operator has 90 days to bring the equipment into compliance.

D. Safety

D1. **Comment:** Determination of what constitutes a safety or feasibility issue must be clarified for the "No VDECS Available" compliance extension. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: Feasibility and safety-related issues will be evaluated on a case-by-case basis by the aftertreatment control manufacturer with the assistance of a licensed professional engineer.

D2. **Comment:** It is our understanding that the Division of Occupational Safety and Health (Cal/OSHA) is drafting a visibility regulation to govern the placement of VDECS. Even though we are in the process of retrofitting equipment, we hesitate to install a VDECS for fear of being in violation of possible pending regulations. Although it was unanimously agreed at the time of the installs that no visibility was restricted, that is not to say that these installs will not be deemed as non-compliant when the OSHA regulation is issued. (APL, PMA)

Agency Response: Cal/OSHA approved guidelines that the commenters are referring to regarding VDECS visibility issues. These guidelines were developed specifically for equipment used at construction sites and do not apply to CHE at marine terminals and intermodal rail yards. Cal/OSHA guidelines for CHE at marine terminals and intermodal rail yards require that safety related issues be evaluated with the assistance of the

original equipment manufacturer and/or a licensed professional engineer. The aftertreatment control manufacturer generally coordinates the evaluation of these issues.

D3. Comment: The "No VDECS Available" compliance extension for safety reasons addresses visibility and space constraints in equipment retrofits. Break bulk equipment are subject to both of these issues when evaluating whether a VDECS is compatible with a piece of equipment or not. Generally speaking, break bulk equipment is one-of-a-kind specialty equipment. (SSA)

Agency Response: See response to Comment D2. The evaluation of the applicability of VDECS is to be done on a case-to-case basis in consultation with the original equipment manufacturer and/or a licensed professional engineer, generally coordinated by the aftertreatment control manufacturer representative.

E. Definition of Port

E1. Comment: It is important to clarify that diesel-fueled equipment within the boundaries of the port or intermodal rail yard, including those at non-port or non-intermodal rail yard related businesses, are subject to the regulation. (APL)

Agency Response: The intent of the CHE Regulation, since the time that the regulation was proposed to the Board in 2005, has been to include all businesses operating within the boundaries of California's ports and intermodal rail yards. Language was added to the definition of port to clarify this intent. In addition, see the response to Comment A4 regarding the regulation clarification that equipment brought on to a port or intermodal rail yard solely for construction or unexpected repairs is exempt from the CHE Regulation. The CHE Regulation is one of several measures that have been adopted to reduce the health risk to the surrounding communities of ports and intermodal rail yards from the emissions of diesel fueled equipment and marine vessels. ARB completed a diesel particulate risk assessment on the Ports of Los Angeles and Long Beach in 2006. The findings showed that CHE was one of the primary contributors to the higher pollution-related health risks near ports. While the surrounding communities had the highest risk levels, diesel emissions from the ports resulted in elevated cancer risk levels over the entire 20-mile by 20-mile study area. To protect public health, it is necessary to control the emissions from all diesel-fueled equipment that reside and operate within port and intermodal rail yard boundaries.

E2. Comment: CARB's staff has proposed that diesel-fueled equipment within the boundaries of the port or intermodal rail yard, including those at non-port or non-intermodal rail yard related businesses, be subject to the regulation. This is a significant change and not a clarifying statement. We have our reservations over the basis for such a change, but also wonder how CARB intends to notify and enforce these requirements on all small and/or small disadvantaged businesses. (SSA)

Agency Response: See response to Comment E1 regarding the original intent of the CHE Regulation and the need to control emissions from all diesel-fueled equipment that resides and operates within the port or rail yard boundaries. ARB staff has worked closely with the owners/operators of California's ports and inter-modal rail yards to obtain contact information for all of their tenants so they could be contacted and informed of their obligations under the CHE regulation. Notifications of workshops, regulatory advisories, and technology evaluation conferences are distributed to a list serve of approximately 4,000 businesses and individuals. The workshops and regulatory advisories in particular are intended to provide the regulated community with an opportunity to ask questions and provide comments. ARB staff continues to work with members of the CHE regulated community to facilitate compliance with the CHE Regulation.

E3. **Comment:** The definition of port should not include non-cargo activities at privately operated facilities that are not on port property. SSI Oakland contains two separate operations – one for the manufacture of scrap metal and one for the shipment of cargo. For SSI Oakland, the equipment used in the designated terminal should be covered by the CHE rule, and the equipment used in the scrap metal manufacturing facility should be covered by the Off-Road Rule. The terminal location is segregated from the manufacturing facility by a secure fencing. SSI Oakland is not affiliated with the Port of Oakland. Other regulatory bodies designated a separation of Port and Non-Port areas. The CHE rule should only control the emissions from equipment that handles "cargo" at a port. Our equipment used in the scrap metal manufacturing facility should be covered by the in-use off-road rule. We worked with the U.S. Coast Guard, as well as the Department of Homeland Security, to establish boundaries between our terminal and our manufacturing operations. (SSI)

The original intent of the CHE Regulation was to reduce emissions from diesel equipment used to move cargo at California Ports. Historically, SSI Oakland has not been considered a port. When CARB originally initiated its outreach for the 2005 CHE rule, it did not engage with SSI, and SSI thus did not have the ability to comment on the original rule. In addition, when state funding was made available to ports and their tenants to upgrade equipment, SSI did not qualify for such program. Finally, when CARB initiated its outreach for the Off-Road rule, SSI was correctly contacted because we are a scrap recycler and processor that operate off-road equipment. (SSI)

Agency Response: See responses to Comments E1 and E2 regarding the need to control diesel emissions within port and intermodal rail yard boundaries and the original intent of the CHE Regulation. The CHE Regulation definition of "port" includes "…all property within the physical boundaries of the port or demarcated as the port on city or county land maps…." The commenter's property fits that definition. The SSI Oakland facility is bounded on all sides by either other port facilities or by port waters. The entire facility is within the boundaries of the Port of Oakland and the diesel-fueled equipment is subject to the CHE Regulation. The CHE Regulation is especially stringent because

of the impact of port emissions on the communities surrounding the ports. The health risk issues the CHE Regulation is working to mitigate are very different from those addressed by the U.S. Coast Guard and the Department of Homeland Security.

As stated above, the original intent of the CHE Regulation was to reduce health risk from diesel emissions at California's ports and intermodal rail yards. Equipment operators at the Port of Oakland were intended to be subject to this rule from the original conception. Additionally, while the CHE Regulation controls emissions from all diesel off-road equipment operated within the port boundaries, not all subjected equipment is specifically used to handle cargo. As the commenter suggests, if this equipment were to be operating outside the port boundaries, it would be subject to the Off-Road Equipment Regulation, however, the Off-Road Equipment Regulation specifically exempts equipment covered by the CHE Regulation.

Very few cargo handling equipment operators were able to qualify for incentive funding because incentive funding will only pay for actions that are either early or obtain reductions above what is required by the regulation. Since the CHE Regulation has quick and stringent compliance requirements, CHE operators generally were not eligible for this funding.

E4. **Comment:** Clarify regulatory language: definition of port. Clarification of the regulatory language is necessary. In part, the regulation has not been well communicated and explained to all affected parties. Extensive resources have been required not only for compliance, but also for understanding the requirements. (ITS, PMA)

Agency Response: ARB staff has been diligent in their efforts to communicate the regulatory requirements to the regulated community. ARB staff held five public meetings and four workgroup meetings during the development of the original regulation in 2004. ARB staff held one implementation workshop and various meetings with port tenants when invited. As documented in Chapter I of the ISOR, ARB staff held four public workshops and meetings to discuss the amendments to the existing regulation. In addition, ARB has issued seven enforcement advisories associated with the CHE regulation since February, 2007. Additionally, ARB staff contact information is provided on the ARB Cargo Handling Equipment Regulatory Activities website as well as included at all workshops and in all public communications. ARB staff responsibly responds to all calls and emails from stakeholders concerning implementation and compliance with the CHE Regulation.

F. Low-Use Extension

F1. **Comment:** A 200 hour low-use exemption equates to 25 working shifts per year, per machine. We request that a higher hour threshold of 400 hours allowing a day a week of use. This is a very desirable amendment for our industry. Our members also request to keep their older equipment as emergency "back-up"

spares even though their CARB declarations may show a piece of equipment slated for retirement or to be repowered. (PMA, PMSA, SSI)

Agency Response: The low-use compliance extension is a short-term, two-year extension providing compliance relief for a limited number of pieces of equipment to be used for operations or for emergency back-up. This is not an exemption. Once the two year extension has expired, this equipment must be brought into compliance either by retrofit with highest available VDECS, repower or replacement, or retirement. ARB staff has set annual operating hour threshold at 200 hours per year based on the estimated emissions impact. An increase in the number of annual operating hours allowed for low-use equipment will increase the adverse impacts of this amendment. Finally, to the extent that the commenters are requesting that equipment that is to be retired or repowered should be allowed to be used as "emergency back-up" equipment, the requested one shift per week seems high if the equipment is truly to be used only as emergency back-up.

F2. **Comment:** We are not sure how CARB determined the baseline that 200 hours of operation qualifies "low-use equipment". We try to look at this from a practical stand point and would recommend 400 hours. We routinely change oil in the equipment every 500 hours, so a standard of 400 hours would not even equal to one oil change per year. In comparison, actively used CHE receive approximately six oil changes per year or more. (SSA)

Agency Response: Please see the response to comment F1 where we identify emission impacts as the key factor in establishing the 200 hour limit.

F3. **Comment:** We don't support increasing the number of hours that are being proposed from the 200 hours a piece of equipment may operate annually to be eligible for a low-use compliance extension to anything higher, because we believe that we still have exposure of these diesel emissions – exposure of these equipment in the rail yard complex or the port complex and the surrounding communities. And we do have concern with increasing hours in that definition. AQMD staff believes that any such low-use compliance option must be limited to the degree feasible, carefully monitored, and phase-out these older equipment at the earliest practicable date. (SCAQMD, SCAQMD1)

Agency Response: ARB staff has maintained all the originally proposed limits on the low-use extension, including maintaining a 200 hour per year use limit, the limited two-year length of the extension, and the ability to limit the number of pieces of equipment granted a low-use extension per facility. The Executive Officer can elect to limit the number of engines granted a low-use extension at a facility to two engines in a single fleet or two percent of a fleet after considering the impact on public health based on an evaluation of number of equipment granted a low-use extension, hours of operation of the equipment, estimated engine emissions levels, and proximity of the equipment to off-site residences. If the hours of use for equipment granted a low-use extension

exceed the maximum allowable 200 hours per year, the equipment must be brought into compliance.

F4. **Comment:** We strongly support strict limitations around the low-use equipment compliance extension. (ALA, CCA, CCA1, EO/CCP, EYCEJ, EYCEJ1, MAHA, NRDC, NRDC1)

Agency Response: See response to Comment F3.

F5. **Comment:** There should be no limit to the number of low-use compliance extensions. The low-use compliance extension allows facilities such as ours to a) maintain a back-up fleet and b) operate specialty equipment that is used so infrequently that SSI cannot justify the significant cost associated with replacing/retrofitting the equipment. While this equipment is critical to our continued operation, its minimal use should lead to its exclusion from the CHE rule. (SSI)

Agency Response: See responses to Comments F1, F2, and F3.

G. Equipment Manufacturer Delays

G1. **Comment:** It is important to preserve the availability of rental equipment as needed until such time as the manufacturers issue the updated Tier compliant engines. In cases where the equipment is not available, a longer extension of a year, or until such time as new equipment becomes available, or until the equipment becomes obsolete, whichever comes first. We believe the six months time limit does not allow for any cost benefits associated with capital leases and/or other rental agreements. (APL, PMA)

In order to make this amendment truly effective and beneficial, we would respectfully suggest that the rental of needed equipment should be allowed until equipment meeting current standards is available, and not be limited to an arbitrary six-month period. (PMSA)

Agency Response: The regulation already makes an allowance for rental of equipment one tier lower than current standards for longer than six months when new equipment delivery delays are longer than six months. Section 2479(e)(B)5.d. states, "Equipment may be leased or rented for up to a six month period or until purchased equipment are available, whichever is longer." This provision is not intended as a mechanism to provide cost benefits (savings) associated with long term capital lease agreements.

G2. **Comment:** Industry also recommends that if rental companies want to do business in California, they must provide equipment that is compliant with California laws. The requirement that rental or lease equipment can only be one Tier lower than the required engine standard does not consider that the majority

of rental equipment would be regulated under the In-Use Off-Road Regulation. Rental equipment that is compliant with the in-use off-road equipment regulation should be sufficient to meet the requirements of the CHE Regulation. Rental companies are required to meet "fleet average requirements" for both NO_x and PM based on their fleet size. Therefore an older, lower Tier may be compliant for the rental company however we would not be able to utilize this equipment under this amendment. For short-term rental purposes, rental, equipment that is compliant with the rental company should also be considered compliant for the renting company. It is unfair that the ports and rail yards should be held to a higher compliance standard than for the off-road sectors. If the equipment is compliant under one regulation, it should be compliant for other regulations for the same type of equipment. This could limit our ability to conduct business if the correct tier engine is not available for rental. (MSC, PMA, YT)

Agency Response: The CHE Regulation requires a faster transition to clean equipment than the In-Use Off-Road Mobile Equipment Regulation due to the environmental justice issue of reducing the health risk for the communities surrounding California's ports and intermodal rail yards. Please see the response to comment E1 regarding the health risk issue and the need for accelerated CHE requirements.

Additionally, the CHE Regulation requirements apply to entities renting or leasing equipment to a port or an intermodal rail yard. Consequently, if a rental company supplies a non-compliant piece of equipment to a port or intermodal rail yard, enforcement action against the rental company may ensue.

G3. **Comment:** Typically, however certain assets are rarely rented in our business (i.e. an RTG or top pick); they are owned, and therefore we cannot see why owned equipment does not qualify for a six month extension, assuming it too meets the same proposed criteria as rental equipment, i.e. the equipment could only be one tier lower than the required engine standard. This suggestion seems logical, especially since once Tier 4 engines are manufactured, there would be a lag between supply and demand. (SSA)

Agency Response: The commenter seems to be requesting that it be allowed a six-month compliance extension for equipment that is only one tier lower than is required under the CHE Regulation. This request is not consistent with the point of the extension, which as originally adopted in 2005 provides, in subsection (f)4, for a compliance extension for in-use equipment in situations where there are manufacturer delays delivering new equipment. This extension requires that the new equipment was ordered at least six months prior to the in-use engine compliance date and that the owner/operator maintain proof of purchase, such as a purchase order. This section was intended to have limited applicability and would not involve significant additional emissions in contrast to the general proposal put forth by the commenter.

H. Opacity Monitoring Program

H1. **Comment:** With the exception of the ARB "Heavy-Duty Diesel Vehicle Smoke Inspection Program", this specific opacity standard is not specified in other ARB diesel regulations including but not limited to, the ARB Off-Road Diesel Regulation, the ARB On-Road Diesel Regulation, the Stationary Diesel Engine Regulation, the Portable Diesel Engine Air Toxic Control Measure, or the Portable Equipment Registration Program (PERP). Why is this regulation different than all your other regulations? Why, on this regulation, do we have to do this intrusive and expensive opacity testing? (DoD, DoD1)

Agency Response: The CHE opacity monitoring program is similar to ARB's "Heavy-Duty Diesel Vehicle Smoke Inspection Program" (Periodic Smoke Inspection Program) for on-road trucks and the California smog check program for passenger vehicles. These programs are in place to verify that in-use engines continue to operate as originally designed and to require the necessary maintenance to support that. This is particularly important for the CHE fleet as the diesel emissions from this equipment impact the surrounding communities. See the response to Comment E1 regarding the diesel particulate risk assessment that showed CHE equipment emissions being one of the primary contributors to significant off-site cancer risks of greater than 100 in a million surrounding the Ports of Los Angeles and Long Beach. The high volume of diesel equipment at ports and intermodal rail yards contribute to significant elevated cancer risk levels in the surrounding communities and can affect areas even at considerable distances. Consequently the CHE Regulation needs to be more stringent than other regulations dealing with other diesel equipment.

H2. **Comment:** We are not aware of any existing opacity issue associated with running of CHE that prompted CARB staff to propose this new opacity requirement or a problem with a lack of adequate maintenance. Further, we are not aware of any other off-road category of vehicles that are subject to a similar requirement. (PMSA)

Agency Response: As discussed in Chapter II of the ISOR, ARB staff conducted a CHE technology meeting in May, 2011. During the course of that meeting, one of the issues that emerged involved the on-going maintenance of CHE and its impacts on the functionality of VDECS. VDECS manufacturers believe that owners/operators need more education on the VDECS operational and maintenance requirements and that this would help the owners/operators operate the retrofitted equipment more effectively. While diesel engines without aftertreatment controls will normally continue to operate without required maintenance, engines that have been retrofitted will more likely incur high incidences of operational problems if they are not properly maintained.

A predominant indicator of whether an engine is properly maintained and performing efficiently enough to allow a VDECS to perform well is engine exhaust opacity. As documented in Chapter II of the ISOR, one important observation of the data from an ARB opacity study is that in-use engine-out PM emissions from certified diesel engines

can be significantly higher than the certification levels if the engine manufacturer's recommended engine maintenance schedules are not followed. These in-use PM levels are significantly higher than the expected engine deterioration levels. However, PM emission levels and measured opacity levels in well-maintained fleets correlate much better with their certification levels. Based on the results of the ARB study, ARB staff believes the opacity monitoring program is a significant tool in the effort to ensure that CHE is properly maintained and operated.

Regarding other off-road regulations not requiring in-use opacity testing, see the response to Comment H1. Although owners/operators of in-use off-road equipment not subject to the CHE Regulation are not required to conduct opacity monitoring on an annual basis, if those equipment owners/operators chose to comply with the In-Use Off-Road Regulation by installing VDECS, they are required to do an opacity test on the equipment to ensure that it is compatible with the VDECS.

H3. **Comment:** This is another proposal with disparate impact where the marine terminals and rail yards are being held to a higher standard than other diesel regulations for similar equipment. We don't see this being proposed in other CARB regulations. The ARB's In-Use Off-Road Equipment Regulation only requires opacity testing as part of the DECS selection process. The On-Road Truck and Bus Regulation only requires opacity testing downstream of a DPF, not ahead of the filter. If equipment was not operated at a port terminal or intermodal rail yard it would be subject to the In-Use Off-Road Equipment Regulation. Again there is a disparate impact to our industry as it is being held to a higher regulatory standard than similar engines falling under different regulations. Why are the ports and rail yards singled out for the added burden? All off-road equipment in the L.A. Basin should be under the same regulation. (MSC, YT, YT2)

Agency Response: The CHE Regulation has stricter requirements than the In-Use Off-Road Equipment Regulation because it deals with a captive fleet that directly contributes to the significant health risk for surrounding communities, as discussed in the response to Comments E1 and H1. As indicated in the response to Comment H2, the purpose of the CHE Regulation's requirement to opacity monitor the engine-out exhaust, upstream of a VDECS, is to detect engine issues before they contribute to a DPF failure. As the Manufacturers of Emission Control Association (MECA) testified at the Board hearing, that DPF failures are most often associated with improper engine maintenance and operation rather than DPF functionality. Regarding the comment on the opacity requirement for on-road trucks (the commenter refers to the On-Road Truck and Bus Regulation incorrectly, reference should be to the Periodic Smoke Inspection Program) only requiring opacity testing downstream of a DPF, not ahead of the filter, an important difference between this program and the one for CHE is that the on-road program includes roadside inspections. In contrast, the intent of the CHE opacity monitoring upstream of a VDECS is to detect engine operation problems that could cause VDECS failure. Opacity monitoring downstream of a VDECS will not indicate engine issues until the DPF has failed due to excessive particulate load.

H4. **Comment:** For facilities with an established and proven equipment maintenance program, there are no significant benefits associated with implementation of an opacity monitoring program. Opacity measurement is not part of our routine business, so this task will need to be outsourced. This will result in additional costs, contractor coordination, and administrative requirements. There will be detrimental effects on operational costs and equipment downtime. Terminal operators maintain their equipment in an effort to maximize productivity. As such, an opacity monitoring program increases operating costs and does not result in significant improvements. (BNSF)

Agency Response: MECA provided testimony that maintenance is an important factor for the durability and long-term performance of a diesel particulate filter (DPF) as well as the engine and the CHE. (The DPF could be either an OEM DPF that is part of the certified engine configuration, or a VDECS which is an after-market retrofitted DPF.) Maintenance is critical because the presence of smoke in the exhaust can no longer be used as an indication of engine operation problems. High smoke opacity could be a sign of excessive oil consumption or a bad fuel injector, both of which result in high engine out PM that may result in plugging the DPF. If a DPF is installed in the exhaust, (either as a retrofitted VDECS or as part of the OEM engine configuration) it will capture the PM and mask any signs of high smoke. MECA has testified that an opacity test is an inexpensive, simple measurement that needs to be an integral part of any proactive maintenance program. MECA estimates that 90 percent of the time, an engine maintenance problem will precede a DPF problem. Performing annual opacity tests is a way for CHE owners/operators to actively monitor the condition of their engines and perform the necessary maintenance to keep their equipment functioning at the engine manufacturers' recommended standards. This will reduce emissions from all CHE, improve performance, and result in extending the life of compliant equipment. Opacity testing of the engine and discovering engine problems early will help preserve the integrity and useful life of the DPF. Opacity testing at the time that the VDECS DPF is being cleaned, should avoid any significant downtime for that equipment. (The CHE opacity monitoring program does not require that engines with OEM DPFs be opacity tested upstream of the DPF because that would require the engine to be operated in a noncertified configuration.)

ARB staff has conducted hundreds of road-side opacity tests on in-use heavy-duty diesel vehicles. That experience has proven that opacity tests can be done quickly and inexpensively. As documented in Chapter V of the ISOR, if a facility chooses to outsource the opacity monitoring, consultant charges range from $30 to $60 per engine per test.

H5. **Comment:** An opacity monitoring program is unnecessary and increases costs. Issues associated with VDECS are the result of VDECS not properly matched to the CHE engine duty cycle or not being able to tolerate our operating conditions and engine duty cycles, not the operation or maintenance of the equipment. An opacity monitoring program will significantly increase the cost burden of the CHE

regulation and will have no impact on the maintenance and operation of port terminal and intermodal rail yard owners/operators because the cost and complexity of the equipment dictates that it be properly maintained and operated. It is not in the best interest of our company to have high opacity engine gasses upstream of the VDECS because the VDECS would suffer a greater load and a shorter run time would surely result. Poor maintenance would also result in higher fuel costs. (APL, SSI, YT)

Our Industry is well aware that poor maintenance of both the engine and the exhaust system are prime contributor to opacity, so we must point out that we already have a high appreciation for the regular maintenance of this equipment as it is critical for them to perform the rigorous tasks required to move cargo on a marine terminal. Terminals simply cannot afford to have substandard equipment, as it adds costs in lost productivity and increases fuel consumption. (PMSA)

Agency Response: Please see the responses to Comments H2, H3, and H4 regarding the cause of most VDECS problems, the use of opacity monitoring as part of a proactive maintenance system, and the cost of opacity monitoring. Please see response to Comment C1 regarding the concern that the VDECS are not able to tolerate their operating conditions.

H6. **Comment:** An opacity monitoring program is not beneficial to port terminal and intermodal rail yard owner/operators due to increased/additional maintenance and repair costs and increased down time for equipment. Our VDECS problems are due to the VDECS being intolerant of our industry duty cycles, not opacity levels. The proposed opacity program adds an additional level of nuisance, both logistically and cost-wise. The opacity testing and recordkeeping will be labor intensive and costly. PMA would recommend that back pressure testing be considered as an equivalent to opacity testing. Back pressure testing is a much more efficient way for the industry to achieve CARB's objective. Back pressure testing is already widely utilized in our industry and the testing can be easily documented. This testing procedure would be more practical as well as more cost effective for the industry. (ITS, PMA)

Agency Response: Please see the responses to Comments C1, H2, H3, and H4 regarding VDECS intolerance to industry duty cycles, the value of opacity monitoring in a proactive engine maintenance program, the testing costs, and anticipated equipment down time.

Regarding the use of back-pressure monitoring in lieu of opacity monitoring, MECA has testified that, while opacity monitoring is a direct indicator of the health of an engine, back-pressure monitor (BPM) data is a direct indicator of the health of a DPF. BPM data is indirectly related to engine maintenance. For example, high backpressure may be a result of high engine out PM, or incomplete filter cleaning. Engine exhaust opacity testing is a way to evaluate the cause of high backpressure readings. BPM is not an adequate substitute for opacity monitoring.

H7. **Comment:** It appears the VDECS manufacturers are attempting to get CARB to regulate, i.e., shift the burden off the manufacturer to provide a product that is designed to work efficiently and effectively in the marine environment by making the terminals responsible for annual testing. (PMA, YT)

It (required opacity monitoring) also appears to be another situation where the deficiencies of the OEMs, and the after-market VDECS providers, would be unfairly passed onto the end-users of the equipment. If the OEMs and VDECS provided are not performing as warrantied then those providers should be held responsible through the certification process. (PMSA)

Agency Response: Annual testing does not shift the burden off the VDECS manufacturers to produce a product that works efficiently and effectively in the marine environment. Annual testing helps remove the primary cause of VDECS failure, lack of required engine maintenance. If VDECS manufacturers do not provide an efficient and effective product, this will become more evident when engine maintenance can no longer be pointed to as a cause for VDECS failure. Both OEM and VDECS manufacturers are required to warranty their products against premature failure. The Verification Procedure specifies a minimum warranty period for products verified by ARB.

H8. **Comment:** We would suggest that language be added that provides for an equivalent standard. In opacity testing an individual can affect the outcome of the test by how fast and how hard the throttle is used. Additionally, if a half-million dollar machine does not pass the opacity test, an operator can stick the sensor in another machine and get paperwork to show a passing test for the expensive equipment. Additionally, it has been said that if we do the testing after the filter, it is a waste of time. But that is apparently what we can do with the yard tractors. We would suggest that back pressure testing be considered as an equivalent to opacity testing. In our opinion, back pressure testing is a better way to achieve ARB's objective where computer-assisted technology can provide a more accurate reading and eliminate variables. Back pressure testing is already widespread in the industry, can be easily documented, and much more cost effective. We do the back pressure testing all the time because we are the ones that pay for that muffler that gets plugged up. (SSA, SSA1)

Agency Response: Using the Society of Automotive Engineers (SAE) J1667 Recommended Practice, Snap Acceleration Smoke Test Procedure for Heavy-Duty Powered Vehicles will help alleviate operator to operator variability. The SAE J1667 Snap Acceleration Smoke Test Procedure has been the industry standard for opacity testing since 1996 and is the method required by the CHE Regulation. The tests will be conducted by personnel trained to properly administer the SAE J1667 Snap Acceleration Smoke Test.

SSA suggests that if owners/operators have equipment that they wish to continue to operate that does not pass the opacity test, they will fraudulently obtain passing results for the equipment. This is in direct contradiction to claims by industry that they do not need to be subject to an opacity monitoring program because they have highly effective equipment maintenance programs. Obtaining fraudulent results for opacity monitoring will be in direct violation of the CHE Regulation and subject to enforcement action.

Please see response to Comment H4 regarding the value of opacity testing upstream of the DPF in order to monitor engine operation. As mentioned in the response to Comment H3, opacity monitoring upstream of a VDECS is being required in order to detect engine operation problems that could cause VDECS failure. Opacity monitoring downstream of a VDECS will not indicate engine issues until the DPF has failed due to excessive particulate load.

The opacity monitoring on yard tractors, and any other equipment with an engine that has been certified with an original equipment manufacturers (OEM) DPF, is to be conducted at the exhaust of the certified engine. This is downstream of the OEM DPF. The engine is not to be operated in a non-certified configuration, e.g., with the OEM DPF removed. While this will only provide information on the health of the DPF, these are the constraints necessary for maintaining an engine in its original certified configuration. Engines that have been retrofitted with a VDECS do not have this constraint and therefore the opacity test can be conducted at the engine-out exhaust, upstream of the VDECS, which will provide information on the health of the engine.

Please see response to Comment H6 regarding the value of opacity monitoring as compared to back-pressure testing.

The opacity monitoring requirements do allow for an alternative method of compliance to be used, if the Executive Officer determines that opacity monitoring is not feasible due to the engine/equipment configuration.

H9. **Comment:** Port terminal and intermodal rail yard owners/operators are responsible for meeting emissions standards set by ARB, regardless of the concentrations of NO_x and PM emitted by an engine. If the exhaust from a CARB verified engine with a CARB verified DPF is not up to those standards, the equipment owner is responsible for making the corrections. The DPF manufacturers' warranties state that the equipment owners are responsible for maintaining the engines to specific emission standards. Proper maintenance of equipment is critical for a terminal operator as poorly maintained engines increase costs for the operator in fuel, performance and downtime. DPF failures resulting from engine maintenance or performance issues are the responsibility of the equipment operators, per the warranty. The additional cost to replace filter cartridges is further rationale for properly maintained equipment. After one or two expensive filter cartridge replacements, the equipment owner will realize it is more cost effective to correctly maintain their equipment.

We see no benefit or justification for requiring additional opacity testing upstream of the DPF. The increased down-time and cost will be detrimental to our operators and productivity with no evident emissions benefit. (MSC, YT)

Agency Response: The CHE Regulation sets standards for CHE in terms of the certification levels of the engines allowed to operate at California's ports and intermodal rail yards. However, prior to the addition of the opacity monitoring requirement, there were no requirements that controlled the actual in-use emissions of the engines. Nor do VDECS manufacturers' warranties state that equipment owners must maintain their engines to specific emission standards, although the Verification Procedure is being updated to require that maximum engine-out opacity levels be specified for the VDECS. Consequently we do not understand the commenters' statements regarding equipment owners being required to correct exhaust emissions from a CARB verified engine or DPF that does not meet the standards.

Additionally, one of the commenters states that equipment owners will realize that it is more cost effective to maintain their engines after having to replace expensive filter cartridges. This suggests the possibility that DPF failures due to poor engine maintenance practices do occur and supports the need for annual opacity monitoring.

The emission levels used in modeling of CHE sources assume that the engines are maintained in good repair. However, as discussed in the ISOR, Chapter II, data from an ARB study indicates that while measured engine-out opacity does not appear to correlate with engine mileage, age, or certification level, it does correlate with measured PM emission levels. This would indicate that variations in maintenance practices impact the emission levels of diesel engines with the consequence that poorly maintained engines will have emissions significantly higher than an engine's certification levels and higher than one would expect from normal engine deterioration levels.

In contrast, PM emission levels and measured opacity levels in well-maintained fleets correlate much better with their certification levels. So, while specific emission reductions cannot be specifically estimated, the success of ARB's on-road diesel Periodic Smoke Inspection Program and the Bureau of Automotive Repair's Smog Check Program to flag maintenance issues and get gross polluters off the road supports the initiation of this program for a captive fleet whose emissions impact the health risk of the surrounding communities.

H10. Comment: Annual opacity testing would place a huge burden on terminal operators to contract for and to provide time out-of-service for the equipment subject to the testing; it would yield few practical results. Since CARB already requires extensive annual reporting on the subject cargo handling equipment this appears to be a requirement arbitrarily imposed with little explanation on the expected air quality benefits that would result. … Only if it can be demonstrated that the owner or operator of the cargo handling equipment has failed to properly maintain the equipment per the OEM or VDECS provider specification should they have the responsibility to provide this additional opacity testing to ensure

that the equipment is performing per the original certification specifications. (PMSA)

Agency Response: Please see responses to Comments H2, H4 and H8 regarding the benefits and cost of the opacity monitoring program. Please see response to Comment H9 regarding the emissions benefits of the opacity monitoring program.

H11. Comment: The cost of compliance with the opacity monitoring is simply not cost effective. The costs associated with purchasing certified opacity measurement equipment, training of opacity measurement staff, time for taking staff and equipment off-duty, logistics, scheduling conflicts, additional recordkeeping, et cetera, does not appear to be a prudent expenditure of funds. Inclusion of this requirement poses a significant impact on DoD installations with respect to the cost of compliance as well as potential enforcement actions. In our opinion, the proposed CHE Regulation without the inclusion of this opacity procedure provides verbiage for ensuring compliance with the regulation and the emissions reduction goals established by ARB. We estimate it will cost our Port Hueneme facility an additional $25,000 a year to implement an opacity monitoring program, beyond what has already been spent. It's all a pot of money that can be used for the larger goal of cleaner air and a cleaner environment. (DoD, DoD1)

Agency Response: Please see the responses to Comments H2, H4, H8, and H9 regarding the value of, costs for, and emissions benefits and need for the CHE opacity monitoring program. The existing CHE regulation does not verify that diesel engines on CHE are maintained to operate as originally designed both to minimize engine-out emissions and to promote VDECS health. Annual opacity monitoring will improve the performance potential of VDECS installed on CHE by reducing engine performance issues as a mechanism for VDECS failure.

Recordkeeping for the opacity monitoring should not be burdensome as opacity monitoring instruments are available that create a printed copy of the results of the opacity test. There are no requirements to report the results of annual opacity monitoring directly to ARB. These receipts should be maintained as part of the equipment's regular maintenance records and available for ARB enforcement staff to review upon request. ARB is not requiring any recordkeeping beyond keeping the opacity test results receipts with the tested equipment's maintenance records.

H12. Comment: The proposed Rule includes extensive recordkeeping requirements associated with the opacity testing provision, which are in addition to the recordkeeping requirements that are already required by the Regulation. The collection and maintenance of these records is burdensome and adds to the overall costs associated with the opacity testing program for which no emissions benefits have been quantified. (UP)

Agency Response: See response to Comment H11 regarding the recordkeeping requirements for the opacity monitoring program. Staff does not believe these

requirements to be burdensome. See the response to Comment H9 regarding the emissions benefits of the opacity monitoring program.

H13. Comment: Due to the benefits, we request that BNSF be allowed to continue utilization of it's our lower cost, more efficient, and proven CHE maintenance program in lieu of an opacity monitoring program. (BNSF)

Agency Response: BNSF may continue to use its CHE maintenance program with the required opacity monitoring as an additional element. Please see the response to Comments H2, H4 and H8 regarding the benefits and costs of the opacity monitoring program. Please see the response to Comment H8 regarding the provision to use an alternate method of compliance.

H14. Comment: Current annual VDECS maintenance costs include approximately five cleanings per year at $450 per cleaning, with labor and other costs. That equals $2,800 per year per piece of equipment. And when you have 64 of them, it is $179,000 per year. Now CARB wants to add opacity testing. Opacity testing equipment is $5,600 to $10,000. Labor costs to complete the tests is approximately three hours. The cost to complete the testing is going to be approximately $330 per unit. If I look at all my equipment, it is over $60,000 a year. (YT, YT2)

Agency Response: Please see the response to Comment H4 regarding the cost to opacity monitor a piece of equipment. The three hours per unit estimated by the commenter is much more than will be required. As stated in Chapter V of the ISOR, the opacity monitoring can be out-sourced at $30 to $60 per piece of equipment. This does not support a three hour test time requirement. The costs estimated in Chapter V of the ISOR allowed for 30 minutes to conduct the test, which is more consistent with the out-sourcing costs, and with our experience under the Periodic Inspection Program. Additionally, if the commenter is performing VDECS maintenance five times per year, this provides ample opportunity to opacity monitor the equipment on an annual basis while the VDECS is removed for cleaning.

H15. Comment: Under the proposed opacity monitoring testing procedure, the DPF must be removed, the measurement done, the DPF reinstalled, and measured again. The testing and recordkeeping will be labor intensive and costly, more than $550 per unit for testing alone, in addition to the negative impact resulting from additional down time of equipment. This would place a significant financial burden on equipment operators who are already bearing higher costs from the manufacturer for "compliant 'equipment and VDECS. (PMA, YT)

Agency Response: ARB estimates (as documented in Appendix C of the ISOR, pages C-9 through C-11) do not support the excessive costs reported; see the responses to Comments H4 and H14 regarding opacity monitoring costs and labor time required for testing. The detailed listing of the costs provided by YT indicates that they mistakenly believe that they need to opacity test each retrofitted piece of equipment twice, once

without the VDECS, and then again once the VDECS is reinstalled after cleaning. This is not required. Sections 2479(e)(2) and 2479(e)(3) do not include a requirement that a port terminal or intermodal rail yard owner/operator conduct two opacity monitoring tests, one with the VDECS off and one with the VDECS reconnected, to test the opacity of a CHE engine. One test, upstream of the VDECS, is needed to assess the opacity of the CHE engine. They are also including the labor time for removing and reinstalling the VDECS, which would need to occur regardless of the opacity testing, due to required VDECS cleaning.

H16. Comment: Since this is a new program, we do not have historic data to accurately estimate the annual testing cost, but believe that costs could be substantial due to equipment downtime and labor. However, the ISOR fails to estimate the emission reductions that will be achieved for the opacity monitoring compliance cost. The ISOR simply states that the opacity testing requirement will keep equipment operating "more cleanly" and "…could result in a reduction in soot levels from CHE." Furthermore, the ISOR states that "… these proposed amendment are not anticipated to result in any significant increase or decrease in GHG's. However there is potentially a small decrease in carbon black emissions."

The collection and maintenance of these records is burdensome and adds to the overall costs associated with the opacity testing program for which no emission benefits have been quantified. (UP)

Agency Response: See the response to comments H4, H9, and H11 regarding the costs and qualitative emissions benefits of an opacity monitoring program, including the testing and record keeping costs. As mentioned in the response to Comment H9, while emission reductions cannot be specifically estimated, the success of ARB's on-road diesel Periodic Smoke Inspection Program and the Bureau of Automotive Repair's Smog Check Program to flag maintenance issues and get gross polluters off the road supports the initiation of this program for a captive fleet whose emissions impact the health risk of the surrounding communities.

H17. Comment: Are there other ARB mobile source-related regulations that will be requiring an opacity monitoring program? If so, I would urge you to consider the economics - if this is a precedent for all those other regulations with the size of the off-road fleet and some of the other fleets, you're looking at some major expenditures of money. If opacity monitoring is required for all in-use off-road equipment, the Department of Defense estimates costs of up to $100 million over the next 10 years. (DoD1)

Agency Response: Currently, the In-Use Off-Road Equipment Regulation only requires the use of an opacity test when matching a VDECS to a piece of equipment. ARB staff does not have any plans to expand opacity monitoring requirements for in-use off-road equipment at this time. Beyond the testing conducted under the HDVIP, we are

not aware that other ARB in-use mobile source-related regulations will be requiring an opacity monitoring program.

H18. **Comment:** In the VDECS equipped units, the VDECS replaces the traditional exhaust system. Once the VDECS has been removed, the unit no longer has an exhaust manifold where the testing probe can be inserted. A "test manifold" must be installed on each VDECS equipped unit, to complete testing. … Custom equipment specific test manifolds would be needed for each VDECS-equipped unit. The annual opacity monitoring program requires the fabrication of equipment-specific "test manifolds" for all VDECS equipped units. The fabrication of these "test manifolds" will increase capital costs of the test program and the annual costs would also increase due to the time and labor to install and remove the manifolds. (UP, YT)

Agency Response: There are several opacity monitoring devices on the market that attach directly to the exhaust flange that the VDECS bolt to and would not require the fabrication of equipment-specific manifolds. VDECS representatives use the opacity test to evaluate engines that have experienced VDECS issues.

H19. **Comment:** How does the opacity testing translate to diesel particulate standards (gram per brake horsepower-hour) as approved for each engine? There are many questions with this proposed amendment and we recommend further study and discussions with equipment operators to develop a beneficial, reasonable, and consistent downstream opacity testing program. (YT)

Agency Response: ARB's study on the correlation of measured engine-out exhaust opacity to measured PM emissions has produced a correlation of measured PM emission levels with measured opacity. This was presented in Figure II-1 in Chapter II of the ISOR. Table II-1 of the ISOR provided maximum opacity limits for different engine certification levels. Please see the response to Comment H4 and H8 regarding the benefits of opacity monitoring the engine-out emissions rather than the emissions downstream of the DPF. Staff believes that the required opacity monitoring program is a beneficial, reasonable, and consistent program.

H20. **Comment:** Conducting opacity monitoring tests upstream of a DPF is costly and time consuming and has a high potential to reduce productivity due to downtime. (MSC, MSC1)

Agency Response: See the responses to Comments H4 and H8 regarding the value of opacity monitoring the exhaust upstream of the DPF, the associated costs, and equipment downtime.

H21. **Comment:** Regarding requiring the removal of the VDECS to complete opacity tests, since retrofitted CHE does not operate without a VDECS, it appears counterproductive to test its opacity level without the control in place, since it

does not test for its normal operating conditions (which under VDECS control would reduce opacity due to the PM reduction). (DoD)

Agency Response: As discussed in the response to Comment H8, the purpose of measuring the opacity of the engine-out exhaust stream rather than the VDECS filtered exhaust stream, is to obtain information about the health of the engine. Specifically, the test is to determine if the engine is operating as originally designed or if there is a maintenance or repair issue that is being masked because the VDECS is cleaning the exhaust gases. Measuring the opacity of the exhaust stream from the VDECS would provide information about the VDECS health, if the filter is still working, and not the engine health.

H22. Comment: There is other less inconclusive option for opacity and we urge you to consider if opacity is the goal to be consistent with the other regulations. (DoD1)

Agency Response: ARB staff has evaluated other options, including backpressure monitoring programs, and determined that, based on information in the response to Comment H6, an opacity monitoring program is the most effective method of determining an engine's operational health and ensuring that port terminal and intermodal rail yard owners/operators' equipment maintenance programs are addressing engine operation issues. We do not believe that this is an inconclusive option because, as discussed in response to Comment H9, ARB's experience with the Periodic Smoke Inspection Program fully supports the use and benefits of such testing.

H23. Comment: Is the annual opacity required regardless of hours of use? What about the proposed "low-use" extension equipment? The DPFs on this low-use equipment will not need to have the filter cleaned for many years. (MSC)

Agency Response: There is not an exemption from the opacity testing requirement for low-use equipment. Low-use equipment is likely to be older, and it is important that this equipment be kept in good operating condition to minimize air quality impacts. However, since a low-use compliance extension is granted in lieu of bringing that equipment into compliance, it is not likely that a low-use piece of equipment will have a VDECS installed and thus testing will not involve removal of the VDECS. However, if a low-use piece of equipment does have a VDECS installed, the regulation provides that an owner/operator may request an alternative method of compliance if it can be demonstrated that complying with the opacity monitoring requirements is not feasible due to the engine/equipment configuration.

H24. Comment: Newer engines (4 years and newer) should be exempt from the opacity monitoring program, as they are in the Truck and Bus Regulation. (MSC, YT)

Agency Response: The 15-day modifications include regulatory language exempting engines less than four years old from the opacity monitoring program. For example, a 2012 model engine would not be included in an opacity monitoring program until 2016.

H25 **Comment:** Controlled engines such as Tier 3 and Tier 4 engines already have low opacity limit requirements as part of the United States Environmental Protection Agency and ARB diesel engine certification process. Since all engine manufacturers are required to certify these engines for opacity limits, it appears inefficient to require more opacity testing for these Tier 3 and 4 Engines (sic) which already have very low PM emissions, or are equipped with manufacturer VDECS. (DoD)

Agency Response: As stated in the response to Comment H24, newer engines (less than four years old) are exempted from the opacity monitoring requirements. However, while these engines are designed for low opacity, maintaining these low levels requires proper engine maintenance. Opacity testing of these Tier 3 and Tier 4 engines after they have been in use for over four years will help flag when these engines are no longer operating at designed opacity levels and require maintenance to return them to as-designed operation.

H26 **Comment:** What are the parameters for this opacity testing? Is there annual reporting required for this proposed opacity testing? (MSC)

Agency Response: The parameters for the opacity testing are defined by the test standard cited in the regulatory language, SAE J 1667. See response to Comment H11 regarding the recordkeeping requirement for the opacity monitoring program. As discussed in the response to Comment H11, the opacity monitoring requires only recordkeeping. There are no annual reporting requirements for the opacity monitoring.

H27 **Comment:** How does opacity reading translate to engine diesel particulate standards (grams per brake horsepower-hour) as approved for each engine? Are the requirements the same as for the :On-Road Truck & Bus" Regulation – I.e. a truck that is 1991 or newer can measure up to 40% opacity and a truck 1990 or older can measure up to 55% opacity? None of these items are mentioned in the proposed changes. (MSC)

Agency Response: A correlation of measured opacity to engine diesel particulate emissions is provided in Figure II-1 of the ISOR. Table II-1 provides the opacity limits for the different engine certification levels. These limits are provided in the amended regulatory language, subsections (e)(2)(A)5.e. for yard trucks and (e)(3)(A)3.e. for non-yard truck equipment. These limits are not the same as for the Periodic Smoke Inspection Program.

H28. **Comment:** We cannot support any opacity testing for equipment with off-road engines as there is a huge disparate impact to our off-road equipment versus the same equipment covered by the "In-Use Off-Road" regulations. (MSC)

Agency Response: See response to Comment H1 regarding the necessity for more stringent controls of off-road equipment at ports and intermodal rail yards as compared to off-road equipment used at other locations throughout California.

H30. Comment: The implementation of the proposed opacity testing program will add to the already high cost of compliance with this Regulation. (UP)

Agency Response: The costs for the opacity monitoring program were estimated to range from $2 million to $3 million dollars for the regulated industry over the 2011 through 2020 time frame. These costs have not been reduced to include the cost relief due to the exemption of engines newer than four years old. These costs were included in estimating the cost-effectiveness of the amendment package, as presented in Attachment 2 of the 15-day modifications, of $135 to $150 per pound of diesel PM. As discussed in this attachment, other diesel measures recently approved by the Board have cost-effectiveness values as high as $76 per pound (the recently amended in-use off-road equipment regulation). However, if fleets choose not to apply for the two additional extension years for equipment without VDECS available, overall costs for the amendments would be reduced to $2.4 million, as shown in Table A2-8 of Attachment 2, and the cost effectiveness would drop to $36 per pound, or essentially the same as that for the original regulation.

H31. Comment: At the very minimum we request that CARB staff do some statistical sampling of existing Cargo Handling Equipment to demonstrate the level of the opacity issue before moving forward with this amendment. (PMSA)

Agency Response: See the response to Comment H1 regarding the similarity of the CHE opacity monitoring program to other vehicle in-use emission level check programs. See the response to Comments H2 and H9, regarding the dependence of in-use engine emissions levels on maintenance practices and the need for the opacity monitoring program to ensure that CHE is properly maintained and not emitting at excessive pollutant levels. See response to Comment H4 regarding the need for the opacity monitoring program to facilitate the successful use of VDECS with CHE. See the response to Comment H14 regarding the anticipated costs to conduct the opacity monitoring program. ARB staff believes this program will produce cost-effective emission reductions due to improved equipment maintenance and the successful implementation of VDECS for these fleets whose emissions are impacting the health of surrounding communities.

I. Rural Small Port Exemption

I1. Comment: The rural small port exemption penalizes other ports and rail yards' operators who have already invested resources in complying with these rules while unfairly allowing others to continue polluting our air. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: The rural small port exemption applies only to ports that have an average annual throughput of less than one million tons and is located more than 75 miles from an urban area. The proposed amendments would establish cargo throughput and community population triggers levels which, if exceeded, would require all CHE at the port to come into full compliance with the CHE Regulation within three years. The only port that is likely to qualify for this exemption is the Port of Humboldt Bay. This port is operating well below its historic level due to the recession. Diesel PM and NO_x emissions at the Port of Humboldt Bay will be slightly greater than under the original rule, but will remain well below the 2006 baseline levels due to decreased activity. Also the North Coast Unified Air Quality Management District is in attainment for ozone and does not contribute to any downwind violations. This small port is vital to the local timber industry. Port goods movement service and future growth is limited by the lack of rail connection to communities outside the immediate vicinity. This small port is not in competition with any of other California ports and so does not receive an unfair business advantage due to this exemption. The number of pieces of equipment impacted by this exemption is small. There are approximately 20 pieces of CHE equipment currently operating at the Port of Humboldt Bay. This equipment will now be subject to the Off-Road In-Use Equipment Regulation and ARB staff is working with Port of Humboldt Bay terminal operators to develop compliance plans for their equipment. This will capture most of the increased emissions due to the exemption.

I2. **Comment:** As a point of clarification, SSI's Oakland facility (which is privately owned, not on port property, and should not be considered a Port by ARB) has an average annual throughput of less than one million tons per year. (SSI)

Agency Response: The commenter appears to be implying that it has some relationship to the rural port exemption. However, the rural port definition, discussed in the response to Comment I1, applies to the entire port area, not to a single facility. The commenter's facility is within the Port of Oakland and, as such, is also closer than 75 miles to an urban area. An "urban area" is defined in the CHE regulation as "…a densely developed territory that contains 50,000 or more people as defined by the latest U.S. Census Bureau census."

J. USEPA Tier 4 Alt PM Emissions Standards

J1. **Comment:** SSI does not support ARB treating these units (engines meeting USEPA Tier 4 Alt PM emissions standards) as Tier 3 engines. Requiring us to retrofit new technology well before the end of its useful life is unfair and an undue financial burden. (SSI)

Agency Response: As discussed in Chapter III of the ISOR, the USEPA Tier 4 Alt PM emissions standard is at least ten times dirtier than the primary Tier 4 PM standard and is similar in emissions to the primary Tier 3 PM standard. This amendment insures that originally anticipated emission reductions are achieved while concurrently providing owners/operators with flexibility to meet short-term operational needs by using engines meeting less stringent emission standards. Engines meeting USEPA Tier 4 Alt PM

emissions standards will be required to be retrofitted with highest available VDECS, if available; however, if a VDECS is not available, there are no requirements that the equipment be replaced or repowered.

J2. **Comment:** Engine manufacturers should ensure that Tier 4 engines meet Tier 4 specifications, not an Alternative PM standard where the end user is responsible to install additional emissions controls/VDECS. The terminal operators are already paying much higher costs for this equipment. The consensus of opinion is that any VDECS retrofit, requiring extra labor and lost-time to retrofit, would not be beneficial. (APL, ITS, PMA)

Agency Response: The U.S. EPA allows engine manufacturers to produce a specified percentage of Tier 4 engines built to alternative, less stringent, PM and NO_x emissions limits. These engines are referred to as FEL or Averaging, Banking, and Trading (AB&T) engines. Please see response to Comment J1 regarding the reason why ARB is requiring the retrofit of these engines. As documented in Appendix C of the ISOR, the cost-effectiveness of this requirement is $63 per pound of PM reduced. As mentioned in the response to Comment H30, this is similar to the cost-effectiveness of similar diesel measures recently approved by the Board. Tier 4 Alt PM standards are essentially Tier 3 standards. To preserve the emission benefits originally intended for this regulation, these engines must be retrofitted with highest level VDECS, similar to a Tier 3 engine.

J3. **Comment:** This must be transparent to the end user at the time of purchase. It is assumed that if a piece of equipment is available for sale in California then it must meet all California environmental requirements. If the point of sale is allowed to sell equipment that is not fully compliant with a CARB regulation then CARB should require that the seller is responsible for any future retrofit requirements at their cost and should compensate the buyer for any lost productivity. At the very least this would ensure full disclosure from the seller. (PMSA)

Agency Response: Language was added to the regulation as part of the 15-day modifications to require that any person who sells, offers for sale, or leases cargo handling equipment with an engine certified to Tier 4 Alternate PM off-road diesel engine standards, as specified in title 13, CCR, section 2423(b)(2)(B) or an independent engine certified to those standards that will be used in CHE to include the following disclosure in writing on the bill of sale, “When operated at a California port or intermodal rail yard, this engine is subject to the retrofit requirements of either subsection (e)(1)(B)3., (e)(3)(B)1.b., (e)(3)(B)2.b.,or (e)(3)(B)3.b. of the California Air Resources Board’s Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards.” This way, a CHE owner/operator can make a fully informed decision prior to purchasing a specific piece of equipment and consider the additional time and cost necessary to retrofit the equipment in their purchase decision. The regulation does not require the seller to compensate the buyer for any costs; however, the buyer will be able to use the information in making his purchase decision.

J4. **Comment:** Regarding requiring the retrofit with highest level VDECS of engines meeting USEPA Tier 4 Alt PM emissions standards, will mean higher cost to the industry but It may be difficult to find VDECS for these engines for some time. (SSA)

Agency Response: See the responses to Comments J1 and J2 regarding the need for this amendment and the associated costs.

J5. **Comment:** Recently a number of OEMs have certified Tier 4 interim engines without OEM installed DPFs. At least one engine manufacturer has indicated that it intends to certify Tier 4 final engines without wall-flow particulate filters. MECA is very concerned that a large number of future off-road engines will be deployed without DPFs that will survive many decades of use in the ports. By not using DPFs, these Tier 4 compliant engines will be able to comply with this regulation without employing BACT as required of older, in-use vehicles that are retrofit with VDECS or Tier 4 FEL certified engines that are required to install Level 3 VDECS. The Tier 4 certified engines that do not employ DPFs will be emitting billions of ultrafine PM particles for years to come. The original off-road fleet rule, adopted by the Board in May of 2007, provided a backstop that required all off-road vehicles operated in the state to be equipped with DPFs either via retrofits or original equipment by 2023. The removal of this requirement will mean that only some vehicles and equipment will operate with the best available control technology. (MECA)

Agency Response: ARB staff is aware that at least one engine manufacturer has indicated that they plan to certify an off-road engine to the primary Tier 4 standards without employing a DPF. We understand that the engine will be designed for high fuel efficiency, minimizing PM but possibly producing higher NO_x and that selective catalytic reduction (SCR) technology will be used to control any excess NO_x. The CHE Regulation does not require new engines that meet the Tier 4 primary PM emission standards to be retrofitted with DPFs. The emission of ultrafine PM from engines employing this technology is outside the scope of this rulemaking.

K. Manufacturers versus End-user Responsibilities

K1. **Comment:** Similar to our comments on opacity testing, the problems faced by our industry are engine and VDECS designs being intolerant to our duty cycles. Manufacturers doing business in California must provide products that will comply with California regulations, for the expected life of the product. If a “compliant” engine or VDECS fails to perform when operated and maintained in the duty cycle it was approved for, the manufacturer must be held accountable for providing whatever remedy necessary to bring that product back into compliance. Penalizing the end user will not improve the quality of product provided by the manufacturer. (YT)

Agency Response: Original equipment manufacturers ensure that their production engines meet the emission standards in place at the time of manufacture and provide data to USEPA that supports the durability of the emissions benefits. There are no requirements that these engines meet future emission standards. However proper maintenance is required for these engines to continue to operate as originally designed. The opacity monitoring program is being initiated to help verify that the proper maintenance is occurring and these engines are not emitting at higher levels than anticipated.

ARB staff hosted a CHE technology meeting in May, 2011. Representatives of a predominant manufacturer of engines for CHE equipment were in attendance and gave a presentation discussing their emissions control technologies and the engine duty cycle the engine was intended to be operated with. After discussing the issues associated with their engines terminal owners/operators have been experiencing, staff of the engine manufacturer worked with terminal owners/operators to address any operational issues associated with their engines.

Should a VDECS result in engine damage, Section 2707 of the verification regulation prescribes the specific responsibilities a VDECS manufacturer's has with regards to aftertreatment control performance and the extent to which they must address this issue. VDECS manufacturers are required to replace or repair damaged engine components caused by a malfunctioning VDECS to the condition they were in prior to the installation of the VDECS .

L. Warranty Engine Replacements

L1. **Comment:** In cases of premature engine failure, CHE owners/operators are allowed to replace an engine under the original equipment manufacturer's warranty with a like-engine even when newer engine standards are in place. This amendment will open the door to the continued use of polluting equipment. A timeframe should be set for the phase out of equipment based on the time it's been in use, as has been done in other regulations. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: New engine warranties are of a relatively short duration, generally one to two years. Allowing a CHE owner/operator to replace an engine that suffers a catastrophic failure under the original equipment manufacturer's warranty with a like-engine even if new engine standards are in place is a fair and cost-effective response to such a failure. In addition, these failures occur infrequently and, as such, there will be minimal numbers of these engines in the CHE engine population. The CHE Regulation provides for the phasing out of older CHE equipment by requiring that after January 1, 2007, in-use equipment must be either retrofitted, replaced, or retired, and newly acquired equipment must meet the most stringent new engine emission standards. .

M. Non-Yard Truck Equipment Transfers

M1. **Comment:** In cases where a facility owner/operator wants to transfer a piece of CHE from one facility to another facility, the commenter would like to be able to transfer the equipment and maintain the current compliance date. Requiring the equipment to be brought into compliance with the CHE Regulation prior to any move adds between $25,000 and $35,000 to the expense of the move, which is estimated at $35,000 for one top-pick. (SSA)

Agency Response: The CHE Regulation, as adopted in 2006, required all equipment introduced onto a facility after January 1, 2007, to meet the requirements for newly purchased, leased or rented equipment. This amendment provides additional flexibility by allowing a terminal operator to move a piece of equipment from one port terminal or intermodal rail yard to another port terminal or intermodal rail yard under the control of the same owner or operator without requiring this equipment to meet the strict requirements for newly purchased, leased, or rented equipment. However, the transferred equipment must be brought into compliance with the requirements for in-use equipment before the equipment is put into operation at the new location. This protects against significant increases in emissions at the facilities to which the equipment is transferred, which could cause adverse health impacts on surrounding communities. While the costs to bring the equipment into compliance must be incurred earlier than the original compliance date, these costs are significantly less than the cost to purchase a new piece of equipment.

M2. **Comment:** Non-yard truck equipment transfers should not be limited to only port-to-port transfers. SSI operates a number of manufacturing facilities throughout California that are not in a port area and we must be able to transfer equipment among all of these facilities as necessary. Most of SSI's non-road equipment fleet is used for manufacturing, and equipment transfers between our facilities allows for back-up in the case of equipment repairs. The non-road equipment emissions at our SSI facilities, with the exception of Oakland, are regulated under CARB's Off-Road rule, and that rule allows for equipment to be utilized between facilities. Equipment transfers should be allowed in a similar manner to the In-Use Off-Road Equipment Regulation. (SSI)

Agency Response: The equipment used at the commenter's port facility must comply with the CHE Regulation. If the commenter wishes to interchange equipment between the port and non-port facilities, then the entire fleet to be used should have been reported to ARB as in-use equipment as of January 1, 2007. This equipment would then be subject to the CHE Regulation in-use equipment compliance dates. The CHE Regulation deals specifically with a captive fleet that impacts the health risk for the surrounding communities. The Off-Road Regulation deals with equipment that is expected to move freely about the State. Consequently equipment moves are handled very differently between the two regulations.

N. Alternative Technologies, Zero Emission and Hybrid Equipment

N1. **Comment:** We believe the staff proposal for an additional focus in emphasis on more rapid transition to zero emissions technologies will benefit many of California's clean air, climate, health protection, and environmental justice goals. (ALA1)

Agency Response: See response to Comment A1 regarding the provisions added to the regulation in the 15-day Modifications to add emphasis on zero emission technologies.

N2. **Comment:** The amendments to the CHE Regulation will hamper our collaborative efforts to speed up the implementation of Zero Emissions Container Movement Systems (ZECMS) and delay any steps to achieve AB 32 greenhouse gas emissions reductions and Scoping Plan goals. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: We disagree. See response to Comment A1 regarding the provisions added to the regulation to encourage the implementation of zero emission technologies.

N3. **Comment:** These amendments do not address or incorporate actions for short or long term GHG emissions reductions from this sector. This would be a missed opportunity to make gains toward AB 32 goals. Given CARB's Sustainable Freight Initiative, GHG emissions reductions co-benefits should be pursued while amending this rule. CARB has the opportunity to set forth GHG actions at the same time it adjusts its diesel regulations. By doing so, CARB will give industry a better direction to plan their equipment investments with less concern about impending GHG regulations. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: We disagree. See response to Comment A1 regarding the provisions added to the regulation in the 15-day modifications to encourage the implementation of zero emission technologies. The CHE Regulation is intended to specifically address PM and NO_x emissions. As acknowledged by the commenters, GHG emissions will be specifically addressed as part of the sustainable freight initiative where a more global approach will be considered. The regulation, as amended, provides CHE owners/operators with a number of compliance options that enables them to make necessary business decisions for the immediate future.

N4. **Comment:** Since 2005, when the CHE regulation was originally adopted, zero emissions and hybrid cargo handling equipment alternatives have increased dramatically. ARB staff needs to complete a revised technical appendix for this regulation, including a technological assessment of zero emissions and hybrid container movement systems before this regulation is submitted to the board for approval. (ALA, CCA, CCA1, EO/CCP, EYCEJ, EYCEJ1, MAHA, NRDC, NRDC1, SCAQMD1)

Agency Response: In the Board resolution, the Board directed ARB staff to conduct a comprehensive assessment of zero-emission cargo handling equipment technologies including, but not limited to, the associated costs, cost-effectiveness, and feasibility. ARB staff has initiated this assessment. Stakeholders will be welcome to comment on the technology assessment when the draft is released for public comment. Additionally, please see the response to Comment A1 regarding the provisions added to the regulation in the 15-day modifications to add emphasis on zero emission technologies.

N5. **Comment:** As part of the resolution to adopt these amendments we urge you to direct staff to support alternatives through the following:

- Promotional and informational activities, such as case studies, and meeting with CHE users/purchasers, ports, and equipment operators.
- Provide support for technology near commercialization, such as certification assistance, involvement in pilot projects and subsidization of equipment purchases.
- Provide support for the demonstration of promising technologies with priorities in the largest rail yards, where CARB and rail companies have committed to expedite air pollution mitigation programs.
  (ALA, CCA1, EO/CCP, EYCEJ1, NRDC1)

Agency Response: There are several ways that ARB staff currently support alternatives, as discussed below.

As documented in the ISOR, ARB staff held a technical meeting on May 26, 2011, in Sacramento to discuss the operation of new cleaner technologies with equipment owners/operators and equipment manufacturers. Staff plans to hold meetings in the future to provide information on and receive feedback concerning other new cleaner technologies.

Please see the response to Comment A3 regarding various ARB incentive programs which are devised to promote the demonstration and commercialization of new cleaner technologies. Additionally, staff will consider how to promote new technologies as part of the technology assessment referenced in the response to Comment B1. ARB's Freight Initiative will also be evaluating opportunities for promoting new cleaner technologies.

N6. **Comment:** While we believe an assessment should have been done before adopting the current CHE Regulation amendments, a future assessment can still direct CARB and industry actions toward a cleaner, safer cargo handling industry. Please see the attached example detailing such a technology assessment, including a list of the many alternatives that we are aware of for cargo equipment (e.g. Linear Synchronous Motor Technology, plug-in hybrid electric Class 8 vehicles, alternatively-fueled yard tractors, electric–battery forklifts, alternatively-fueled forklifts, hydrogen-electric forklifts, diesel-electric hybrid straddle carriers, electric and diesel-electric hybrid RTG cranes, and electric rail CHE). Staff has committed to including this technology assessment

in the freight initiative, possibly as early as 2012, we want to be involved in this process of reviewing the feasibility of the technologies assessed. (ALA, CCA1, EO/CCP, EYCEJ1, NRDC1)

Agency Response: See response to Comment N4 above regarding the initiation of a technology assessment. The assessment will evaluate the array of technologies listed by the commenter. Stakeholders will be welcome to comment on the assessment after it has been made public. As mentioned in the response to Comment B1, our first initial assessment has determined that electric and hybrid equipment are currently available for only a limited array of CHE, primarily yard trucks, small forklifts, and RTG cranes.

N7. **Comment:** This is an area where the Alternative Compliance Program could provide flexibility to help the CHE regulation benefit from hybrid power systems available for equipment affected under the rule. (ALA, CCA, CCA1, EO/CCP, EYCEJ, EYCEJ1, MAHA, NRDC, NRDC1)

Agency Response: The Alternative Compliance Plans (ACP) in the original CHE Regulation has allowed the consideration of new technologies. As part of the 15-day modifications, regulatory language was added to specifically list hybrid and electric technologies as technologies that may be used in an Alternative Compliance Plan. Additionally, regulatory language was added as part of the 15-day modifications to allow yard trucks to be included in an ACP.

N8. **Comment:** Alternative fuel vehicles, including electric equipment, should not simply be a form of compliance with Best Available Control Technology (BACT). Instead alternative fuels should be the preferred method of compliance, especially where staff finds CHE technologies that are promising but not yet commercially available. ARB should outline a plan for supporting the demonstration and commercialization of alternate fuel vehicles, including electric equipment. (ALA, CCA, CCA1, EO/CCP, EYCEJ, EYCEJ1, MAHA, NRDC NRDC1, SCAQMD1)

Agency Response: Please see the response to Comment A3 regarding the Administrative Procedures Act, which governs ARB's regulatory process for adopting regulations, and directs ARB to adopt performance based standards when possible rather than prescriptive standards. Please also see in the response to Comment A3 the discussion about the various ARB incentive programs which are designed to promote the demonstration and commercialization of new cleaner technologies. In the technology assessment, referred to in Comment B1, ARB staff will be reviewing opportunities for the introduction of alternative fueled equipment. As mentioned in the response to Comment A1, regulatory language was added in the 15-day modifications to encourage the introduction of alternative technology equipment. Additionally, the Freight Initiative will be reviewing options for alternative technologies.

Finally, implementation of ARB's Low Carbon Fuel Standard (LCFS) encourages fuel diversity and petroleum replacement by lowering the carbon content of transportation

fuels used in California. The LCFS is designed to provide a durable framework that uses market mechanisms to spur the steady introduction of lower carbon fuels. The framework establishes performance standards that fuel producers and importers must meet each year beginning in 2011. The LCFS will also reduce GHG emissions from the transportation sector by approximately 16 million metric tons in 2020.

N9. **Comment:** In addition to reducing particulate matter and NO_x pollution, alternative fuels bring other benefits to the State of California including fuel diversity, petroleum replacement, and lower GHG emissions. These benefits should be strongly encouraged and incentivized, if not mandated at intermodal yards and marine terminals, where fleets are centrally fueled and managed, allowing for the use of specialized fuels. (CCA, EYCEJ, MAHA, NRDC)

Agency Response: See response to Comment A3 regarding the need for performance based standards rather than prescriptive standards and the discussion of ARB incentive programs to fund alternative technologies.

N10. **Comment:** AQMD staff strongly believes that there is an opportunity to encourage and incentivize the use of zero-emission technologies for CHEs within the framework of the regulation. (SCAQMD)

Agency Response: Please see response to Comment A1 regarding the provisions added to the regulation in the 15-day modifications to encourage the implementation of zero emission technologies. Please see response to Comment A3 regarding ARB incentive programs to encourage the use of zero–emissions technologies.

N11. **Comment:** We do see opportunities to increase or accelerate the deployment of these zero emission equipment, and we have been talking with staff about other approaches similar to your off-road regulation and your truck and bus regulation that provides additional credits to early adopter of zero-emission equipment. And we believe that can provide more flexibility to the program. (SCAQMD, SCAQMD1)

Agency Response: The Off-Road Regulation and the On-Road Truck and Bus provision which provide credits for early adoption of zero emission or hybrid vehicles control emissions from statewide fleets that move freely about California. As discussed in the response to Comments E1 and H1, the impact of the CHE fleet emissions on the health risk of the surrounding communities results in the need for more stringent control than the control of the state-wide off-road fleets. Providing credits to early adopters of zero-emission equipment would allow higher emitting equipment to operate longer than the regulation specifies. ARB staff believes that requiring all equipment to comply with the stringent CHE Regulation standards provides more effective emissions controls than the early introduction of zero-emission equipment in conjunction with allowing uncontrolled equipment to continue to operate. ARB staff prefers to incentivize the use of zero-emission equipment through voluntary programs. Additionally, as discussed in the response to Comment A1, changes were made to the regulation's language in the

15-day modifications to allow yard trucks to be included in alternative compliance plans as well as requirements for replacement with zero and near-zero emissions technologies for the third and fourth years of a “No VDECS Available” compliance extension, both of which provide incentives for these technologies.

N12. **Comment:** ARB should participate in, and co-fund, the linear synchronous motor project at the Ports of Los Angeles and Long Beach to support the transition to Zero Emissions Container Movements Systems (ZECMS). (ALA, CCA1, EO/CCP, EYCEJ, NRDC1, SCAQMD)

Agency Response: This is outside the scope of this rulemaking, therefore no response is needed.

O. CHE Emissions Inventory Methodology

O1. **Comment:** ARB has combined the population of equipment and activity data from various ports to develop category averages. This differs from the Port of Long Beach’s (POLB) approach in which the annual inventories are calculated at a detailed, individual equipment level, providing a more accurate estimate of emissions. As a result, even with the use of the same data and emissions calculation methodology, the Port’s emissions estimates and ARB’s emissions estimates will likely differ and impact the comparison of emissions reductions under the upcoming State Implementation Plan (SIP) and Clean Air Plan (CAAP). It is recommended that the Port and ARB work cooperatively to account for these differences during future SIP and CAAP updates. (POLB)

Agency Response: This comment does not pertain to the current rulemaking, therefore no response is needed. However, ARB staff will continue to work with the ports on their annual emissions inventories which includes discussing the differences between ARB assumptions and the Ports’.

O2. **Comment:** POLB has noted a change in ARB methodology to determine deterioration rates for CHE. The previous ARB suggested methodology (and the current methodology used by POLB in its annual port-wide emissions inventories) determines the deterioration rate of equipment based on the “useful life” of equipment, by equipment type. In the updated cargo-handling equipment emissions inventory, ARB assumes that full deterioration of equipment occurs at 12,000 hours of use. This assumes that the rate of deterioration is the same for all equipment regardless of equipment useful life. It is POLB’s opinion that fixing deterioration at 12,000 hours of use is overly conservative and does not reflect the useful life of maintenance practices of terminal operators at the Port, nor does it accurately reflect the actual rate of deterioration of CHE operating at the Port. It is therefore recommended that the Port and ARB work together to develop a more accurate deterioration profile for CHE operating at POLB. (POLB)

Agency Response: Improvements in the methodology for estimating the emissions from CHE included adjustments to the estimated useful life of engines. The rationale for these changes is provided in the ISOR Appendix B. No changes in the emission standards resulted from these changed in the emissions calculation methodology. The changes in methodology impacts emissions accounting only and has no impact on the emission standards in the CHE Regulations. The emission standards are based on the model year of the engine and what retrofit technology is available and not on engine operating hours. Emissions inventory methodologies are constantly changing as new and better data becomes available. ARB staff will continue to work with the ports to improve mobile source inventory methods. ARB staff is also very supportive of efforts to collect additional information that will improve the ports' and ARB's inventories.

IV. SUMMARY OF PUBLIC COMMENTS AND AGENCY RESPONSES – NOTICE OF MODIFIED TEXT

Two written comment letters were received in response to the 15-day notice of modifications to the proposed amendments. Many of the comments in the letter from Pacific Merchant Shipping Association (PMSA) repeated comments regarding the opacity monitoring program that had been received during the 45-day comment period and did not specifically address the proposed 15-day modifications. These comments were summarized and responded to in the Summary of Comments and Agency Responses to the Original Proposal. See response to Comments H2, H5, H7, H10, and H31. ARB staff has not restated these specific comments as they were (1) not responsive to the 15-day modifications and (2) as stated, were previously addressed in the 45-day comment responses. A summary of all the comments previously not responded to, and ARB's responses, are provided below.

Comments Received during the 15-day Comment Period

Abbreviation	Commenter
MECA2	Manufacturers of Emission Controls Association Dr. Rasto Brezny Written Testimony: June 22, 2012
PMSA1	Pacific Maritime Association T.L. Garrett Written Testimony: July 2, 2012

1. Comment: Several of our members have shared with me their experience with opacity measurements on Tier 3 equipment. Even brand new Tier 3 engines may exhibit higher opacity than Tier 2 certified engines. Within a few thousand hours the opacity on some of these engines is significantly above the OEM certification values. Furthermore,

MECA members experience is that many machines used in cargo handling operations are used around the clock and therefore may accumulate more than 2,000 engine hours per year. Therefore over the period of their exemption from opacity monitoring, they would exceed the full useful life of the engine that manufacturers use to certify off-road equipment which is 8,000 hours. I understand that the four year exemption was based on a precedent set for highway heavy-duty trucks, however, on-road vehicles don't see the around the clock heavy use that CHE equipment is subjected to.

Due to the high rate of operation for this equipment the opacity measurement exemption should be limited to four years or 4,000 hours after the model year of the engine, whichever comes first. (MECA2)

Agency Response: We disagree with this recommendation. We believe, in this case, consistency with the exemption for on-road vehicles is appropriate. This exemption represents the best starting point for an in-use opacity testing program for CHE. ARB staff will track and evaluate the implementation of the opacity testing requirement. If we find durability issues, we can initiate further study and determine what actions are needed to address any issues that arise.

2. **Comment:** If an operator waits for four years before checking the engine out opacity, fleets won't have any reference point as to what the normal opacity for that engine should be and will likely use the four year value as the baseline. The experience of VDECS manufacturers is that many of these machines will already have elevated opacity by the time they are four years old as the opacity values reported in the EPA engine certification are typically substantially higher than a highway engine.

We would recommend that as new engines are put into service, they be required to measure and record a baseline engine out opacity value for the engine. (MECA2)

Agency Response: We disagree. Opacity limits are based on the original certification requirements for the engine and the opacity level consistent with that certification level. These limits are provided in the regulatory text, sections (e)(2)(A)5.e for yard trucks and (e)(3)(B)3.e for non-yard truck equipment, as well as in Table II-1 of Chapter II of the ISOR. These limits serve as the "reference point" as to what the normal opacity for the engine. Consequently, initial tests for the new engines are not required.

3 **Comment:** Per section 2479(e)(2)5.f. - PMSA is also concerned that this provision has been proposed without fully examining whether or not potential issues with respect to the existing labor structure that is in place at most west coast marine terminals is compatible with this requirement. This overly-prescriptive mandate on a marine terminal to conduct this testing on equipment could prove to be extremely problematic for both the terminals and their labor force if these requirements lead to significant disruptions. At the very least, CARB should first discuss with marine terminal operators ways to achieve the goal intended by this requirement prior to determining how we should be

conducting our day-to-day operations in this matter. While we are convinced that mutually acceptable solutions can be found, it is often not possible for terminal operators to quickly and simply hire contractors to perform these tasks outside of existing labor agreements, and likewise it is neither quick, inexpensive or simple for the existing terminal labor force to constantly retool itself to address new certification protocols outside of their core jobs and training regiments. The need to train appropriate labor to administer the SAE J1667 test procedures or find new manners in which to employ the existing contractors skilled in this area may require an extension of the timelines for opacity testing outlined in Section 2479(e)(2)(A)5.f. (PMSA1)

Agency Response: This comment is not responsive to the 15-day modifications. However, out of consideration to the commenter, ARB staff will address their comment. It is essential to the integrity of the opacity monitoring program that individuals performing the monitoring be consistently trained to administer the opacity test per the SAE requirements. As mentioned in Comment H8 of the original 45-day comments, an individual can affect the outcome of the test by how fast and how hard the throttle is used. These classes are used by other unionized labor forces for fleets required to opacity monitor their on-road diesel truck fleets. It is not unreasonable to require specific training for administering this monitoring in a consistent manner. We would also point out the properly operating diesel engines is critical for the health and safety of the terminal labor force.