THE CARL MOYER PROGRAM GUIDELINES

Approved Revisions 2011






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California Environmental Protection Agency

Air Resources Board

In Memory of Dr. Carl Moyer
(1937 - 1997)

This program is named in honor of the late Dr. Carl Moyer, whose extraordinary dedication, hard work, vision and leadership made this program possible. He created and masterminded this program, in a noble effort to unite business and government in the name of public interest to improve California's air quality.

This update was a collaborative effort and has benefited from the valuable contributions of the participating air districts and all other stakeholders. The ARB appreciates the considerable efforts of air district staff both in the development of these guidelines as well as the day-to-day implementation of the Carl Moyer Program.

EXECUTIVE SUMMARY

Since 1998, the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) has filled a critical niche in California's strategy to achieve clean air. The Carl Moyer Program provides funding to encourage the voluntary purchase of cleaner-than-required engines, equipment, and emission reduction technologies. While regulations continue to be the primary means to reduce air pollution emissions, the Carl Moyer Program plays a complementary role to California's regulatory program by funding emission reductions that are surplus, i.e., early and/or in excess of what is required by regulation. The Carl Moyer Program accelerates the turnover of old highly-polluting engines, speeds the commercialization of advanced emission controls, and reduces air pollution impacts on environmental justice communities. Emission reductions achieved through the Carl Moyer Program are an important component of the California State Implementation Plan, the State's federally-required plan to meet the ambient air standards.

In its first 12 years, the Carl Moyer Program provided over $680 million in state and local funds to clean-up over 24,000 engines. This reduced about 100,000 tons of ozone precursor pollutants, which include oxides of nitrogen (NOx) reactive organic gases
(ROG), and 6,000 tons of toxic diesel particulate matter (PM) throughout California. . For fiscal year 2010/2011, approximately $69 million of State funding is available through the Carl Moyer Program, with an additional $50 million of local funds that can be spent on similar projects.

The Carl Moyer Program is implemented through a partnership between the California Air Resources Board (ARB) and local California air pollution control/air quality management districts (air districts). The Health & Safety Code directs ARB to oversee the Carl Moyer Program by managing program funds; developing and revising guidelines, protocols, and criteria for covered vehicle projects; and determining methodologies used for evaluating project cost-effectiveness. ARB also distributes State funds to participating air districts for program implementation each year. Air districts follow the Carl Moyer Program Guidelines (Guidelines) to select, fund, and monitor specific clean air projects in their areas.

These Guidelines spell out basic requirements for administrative procedures, eligibility criteria for projects in different source categories, cost-effectiveness criteria, and reporting practices. The Guidelines also include requirements for administering the Voucher Incentive Programs and the Agricultural Assistance Program. While the Guidelines incorporate criteria specified in State law and provide basic standards for program implementation, air districts may impose additional and/or more stringent criteria in order to tailor their programs to meet local needs (except in the Voucher Incentive Programs). This affords air districts with considerable flexibility in Carl Moyer Program implementation while ensuring the proper and responsible use of State funds.

As a result of the current economic climate, ongoing implementation of existing regulations, and changes mandated by statute, stakeholders have asked ARB to

consider changes to allow greater flexibility and expand opportunities to fund emissions reduction projects. Through public workshops, workgroup meetings, and the advisory group chaired by ARB Board Member Sandra Berg, staff has taken this valuable input and used it to develop the proposed revisions in this document.

The staff's proposal increases eligibility for funding of projects to achieve surplus emissions reductions and streamlines the administrative processes while adhering to all statutory requirements. Staff's proposal includes the addition of two new source categories: Emergency Vehicles (Fire Apparatus) and Lawn and Garden Equipment Replacement. In addition, the proposed Guidelines include a new Off-Road Voucher Incentive Program, a streamlined Off-Road Equipment Replacement Program, and a revised methodology for determining surplus emission reductions. Finally, the proposed 2011 Guidelines also incorporate changes that have been previously approved under the Executive Officer's authority granted by the Board, such as the inclusion and modifications of the Voucher Incentive Programs, providing additional flexibility in the replacement programs, streamlining administrative requirements, and include legislatively directed updates.

These 2011 Guidelines affect Carl Moyer Program projects beginning with those funded with fiscal year 2011/2012 funds. Air districts may also opt to utilize these Guidelines for projects funded with fiscal year 2010/2011 funds.

Over the years, the Carl Moyer Program has played a crucial role by offering financial incentives for companies to reduce emissions by upgrading engines and equipment sooner than required by regulations. The revisions presented in this latest version of the Guidelines look to adapt to new challenges facing businesses and public agencies. Looking ahead, ARB will continue to monitor the effectiveness of the Carl Moyer Program, including listening to stakeholder feedback, while recognizing that the health of our society, the changes in our economy, and the need to improve air quality are inseparable.

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THE CARL MOYER PROGRAM GUIDELINES

PART I of III

PROGRAM OVERVIEW AND PROJECT CRITERIA

Chapter 1: PROGRAM OVERVIEW

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a grant program that funds the incremental cost of cleaner-than-required engines, equipment, and other sources of air pollution. Although air pollution regulations have significantly reduced emissions and improved air quality across the State, many areas of California continue to experience unhealthy air. The Carl Moyer Program complements California's regulatory program by providing incentives to obtain early or extra emission reductions, especially from emission sources in environmental justice communities and areas disproportionately impacted by air pollution. Although the Carl Moyer Program has grown in scope, it retains its primary objective of obtaining cost-effective and surplus emission reductions to be credited toward California's legally-enforceable obligations in the State Implementation Plan (SIP) – California's road map for attaining the health-based national ambient air quality standards.

These 2011 Carl Moyer Program Guidelines (Guidelines) update the program to respond to stakeholder feedback, the downturn in the economy, more current technical information, and new regulatory requirements for vehicles, equipment, engines, and other pollution sources in California. In addition, the administrative procedures have been clarified and streamlined for easier use by the implementing local air pollution control and air quality management districts (air districts). Overall, in order to increase eligibility for projects, staff has modified source category requirements and revised the methodology for determining if projects result in surplus emission reductions. This includes two new source categories being added to the Carl Moyer Program: Emergency Vehicles (Fire Apparatus) and Lawn and Garden Replacement, and the development of two Voucher Incentive Programs (VIP) to help streamline the existing on-road and off-road replacement programs. Where appropriate, the Guidelines coordinate the Carl Moyer Program with the Goods Movement Emission Reduction Program, a bond program created by voter-approved Proposition 1B in 2006 that covers some of the same sources as the Carl Moyer Program.

These 2011 Guidelines affect Carl Moyer Program projects beginning with those funded with fiscal year 2011/2012 funds. Air districts may also opt to utilize these Guidelines for projects funded with fiscal year 2010/2011 funds. The revised cost-effectiveness limit and capital recovery factors may be used by air districts once the Air Resources Board (ARB or Board) adopts the 2011 Guidelines, but must be used after July 1, 2011. As required per statute, ARB will annually update the cost-effectiveness limit and capital recovery factors.

A. Background

Since 1998, the Carl Moyer Program has provided grants to encourage the owners of diesel engines to go beyond regulatory requirements by retrofitting, repowering, or replacing their engines with newer and cleaner ones. The Carl Moyer Program has been a successful and popular air pollution program. In its first 12 years, the Carl Moyer Program provided over $680 million in State and local funds to clean-up

over 24,000 engines. This reduced about 100,000 tons of ozone precursor pollutants, which include oxides of nitrogen (NOx) reactive organic gases (ROG), and 6,000 tons of toxic diesel particulate matter (PM) throughout California. For fiscal year 2010/2011, approximately $69 million of State funding is available through the Carl Moyer Program, with an additional $50 million of local funds that can be spent on similar projects.

The Carl Moyer Program has been successfully implemented through the cooperative efforts of the ARB and the air districts. The Health and Safety Code directs ARB to oversee the Carl Moyer Program by managing program funds; developing and revising guidelines, protocols, and criteria for covered vehicle projects; and determining methodologies used for evaluating project cost-effectiveness. ARB also distributes State funds to participating air districts for program implementation each year. Air districts follow the Guidelines to select, fund, and monitor specific clean air projects in their areas. The air districts, following the criteria approved in the Board approved Guidelines, provide grants to public and private entities for the incremental cost of cleaner-than-required engines and/or equipment.

Air districts enjoy considerable flexibility in implementing the Carl Moyer Program. Air districts may focus their funds on specific project categories in order to coordinate with other incentive funds or local funds. This flexibility allows air districts to tailor the use of Carl Moyer Program funds to meet local air quality objectives while still ensuring the proper and responsible use of State funds.

1. Program History

   The Carl Moyer Program was created in 1998 when $25 million was included in the fiscal year 1998-1999 State budget to fund a lower-emission heavy-duty engine incentive program. The ARB adopted the first set of Carl Moyer Program Guidelines in early 1999, and legislation (Assembly Bill (AB) 1571) enacted in 1999 formally established the statutory framework for the program (Health & Safety Code § 44275, et seq). The program initially focused on reducing NOx emissions from heavy-duty diesel engines in order to implement a strategy in the 1994 California SIP for ozone that called for the early introduction of cleaner engines. The scope of the program has expanded over the years with statutory changes adding both new covered pollutants and new source categories.

   Legislation enacted in 2001 (AB 1390) required air districts with a population of over 1 million to expend 50 percent of Carl Moyer Program funds for projects that operate or are based in environmental justice areas (Health & Safety Code § 43023.5).

   Legislation enacted in 2004 (AB 923 and Senate Bill (SB) 1107) provided increased and continued funding through 2015 while significantly expanding the Carl Moyer Program. AB 923 expanded the Carl Moyer Program to include light-duty vehicle projects and agricultural sources of air pollution as defined in Health and Safety Code section 39011.5(a). AB 923 also expanded the Carl Moyer Program from a NOx focused incentive program to include projects that also reduce reactive organic

gases and fine particulate matter (PM_{10}). This change allows the Carl Moyer Program to more comprehensively address all of California's air pollution challenges, including the air toxic risk associated with emissions from diesel engines. Additional legislation enacted in 2004 (AB 1394) directed ARB to include in the Carl Moyer Program heavy-duty fleet modernization projects that reduce NOx and/or PM_{10} emissions through the replacement of old trucks.

Legislation enacted in 2005 (SB 467) required ARB to revise the Carl Moyer Program Guidelines to include projects in which an applicant turns in off-road equipment powered by internal combustion engines and replaces that equipment with new zero-emission technologies.

Legislation enacted in 2006 (SB 225) provides additional resources for program administration to address the expansion of the program. This legislation increased allowable expenditures for air districts' program administration from 2 percent of program funds for outreach to 5 percent for air districts with one million or more inhabitants and to 10 percent for those with less than one million inhabitants. ARB retains 4 percent of program funds for outreach, oversight, and administration. These additional resources enabled ARB and the air districts to improve program accessibility, efficiency and accountability.

Legislation enacted in 2009 (SBx2 3) allows a maximum project life of at least 10 years for off-road farm equipment projects. This legislation also allows for funding of these off-road farm equipment projects up to the compliance date as determined by statute, regulation or rule.

Legislation enacted in 2010 (AB 1507) requires ARB to revise the Guidelines by July 1, 2011, to allow for the combination of Carl Moyer Program funds with funds designed to reduce greenhouse gas emissions from federal programs or the Alternative and Renewable Fuel and Vehicle Technology Program without including them in the cost-effective calculation for the Carl Moyer Program funds. Such revisions are included in the 2011 Guidelines.

ARB has revised the Guidelines several times to address these legislative changes. The 2011 revisions is the sixth edition of the Carl Moyer Program Guidelines.

2. Core Principles

Emission reductions funded through the Carl Moyer Program must be real, surplus, quantifiable, and enforceable in order to meet the underlying statutory provisions and to be SIP-creditable. The requirements in the Guidelines are intended to ensure these core principles are met.

To ensure that projects are surplus to regulations, funded projects must not be required by any federal, State or local regulation, memorandum of agreement/understanding with a regulatory agency, settlement agreement,

mitigation requirement, or other legal mandate. ARB also sets a minimum project life of three years to ensure that the program does not fund actions taken to comply with regulatory deadlines. This minimum three year project life helps ensure the overall cost-effectiveness of the program. In some cases, the Board has approved exceptions to the three year project life, which include small fleets with on-road vehicles (two year project life) and stationary agricultural equipment (one year project life). In addition, a maximum project life is established for each project type to ensure that the emission reductions are real for the life of the project.

The Guidelines require that emission control technologies be certified or verified by ARB (certification or verification by the United States Environmental Protection Agency (U.S. EPA) or International Maritime Organization may be allowed for some source categories for which ARB does not have a certification or verification program) to ensure that real, quantifiable emission reductions are achieved over the life of a project.

Robust administrative requirements are in place to ensure that emission reductions are enforceable and are achieved for the life of a project. Grantees must sign contracts enforceable for the life of a project. The Guidelines also include auditing and monitoring provisions to ensure the expected emission reductions are achieved.

B. Funding Sources

The Carl Moyer Program has been funded through a variety of mechanisms since its inception in 1998. In the program's first four years, the California Legislature funded the Carl Moyer Program through annual budget appropriations. Voter approval of *Proposition 40: The California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002* provided program funding for the fifth and sixth year.

Legislation enacted in 2004 (SB 1107 and AB 923) provide continuous funding for the Carl Moyer Program starting in the program's seventh year and moving forward. This legislation provides three funding sources for the Carl Moyer Program.

1. Smog Abatement Fee: SB 1107 adjusted the smog abatement fee from $6 to $12 while extending the newer-vehicle Smog Check exemption. This additional fee is directed to fund the Carl Moyer Program, securing up to $60 million in annual funding for the program (Health & Safety Code § 44091.1). This legislation does not have a sunset date.

2. Tire Fee: AB 923 adjusted the tire fee that is assessed on purchasers of new tires from $1 per tire to $1.75 per tire (Public Resources Code, section 42885). The adjustments to the tire fee translate to up to $25 million available for the Carl Moyer Program. This legislation sunsets in 2015.

3. Motor Vehicle Registration Fee: AB 923 also gave air district governing boards the authority to increase the vehicle registration surcharge by $2 to pay for four specific clean air incentive programs:

   (A) Projects eligible for grants under the Carl Moyer Program.

   (B) The Agricultural Assistance Program.

   (C) The new purchase of school buses pursuant to the Lower-Emission School Bus Program.

   (D) An accelerated vehicle retirement or repair program.

To date, 20 air districts have adopted the $2 Motor Vehicle Registration fee. In fiscal year 2010/2011, we estimate that the air districts will receive approximately $50 million from this fee. This legislation sunsets in 2015.

The $2 fees are sent directly from the Department of Motor Vehicles to the air districts, unlike the funds collected via the smog abatement and tire fees which are distributed by the ARB to air districts following a funding formula specified in Health and Safety Code section 44299.2.

In fiscal year 2010/2011, approximately $69 million from smog abatement and tire fees are available for the Carl Moyer Program.

C. Project Types

The Carl Moyer Program funds clean air projects involving a wide variety of vehicles and equipment. Typical types of projects are listed below.

1. Repower: The replacement of an in-use engine with another, cleaner engine.

2. Retrofit: An emission control system employed exclusively with an in-use engine, vehicle or piece of equipment.

3. New purchases: Vehicles or equipment certified to optional, lower emission standards. While common in the past for on-road heavy-duty vehicles, this project type is becoming much less common. As increasingly stringent emission standards for new engines become required, there are fewer engines certified to optional standards.

4. Fleet modernization or equipment replacement: The replacement of an older vehicle or piece of equipment that still has remaining useful life with a newer, cleaner vehicle or piece of equipment. The old vehicle/equipment is scrapped. On-road heavy-duty vehicle fleet modernization and off-road equipment replacement are existing eligible, project categories. In addition, two new source

categories which replace older engines and equipment with newer engines and equipment are proposed for inclusion in these guidelines: Emergency Vehicles (Fire Apparatus) and Lawn and Garden Equipment Replacement.

Two VIPs have been developed that streamline existing replacement funding options and are included as stand-alone programs in Part III of these guidelines.

5. Vehicle retirement (or car scrap): Paying owners of older, more polluting vehicles that still have remaining useful life to voluntarily retire those vehicles earlier than they would have otherwise.

More details on eligible project types can be found in Chapters 4 through 14 of these Guidelines. Those chapters are written to provide an initial indication of the most likely project types in each category. Other projects may be eligible; interested applicants should reference the details in each section and consult with their air district for additional solicitation material, program brochures, and to discuss potential Carl Moyer Program projects.

D. Summary of Changes since 2008

In early 2009, ARB adopted the On-Road Voucher Incentive Program (On-Road VIP) and in March 2010, the Board adopted a number of near-term revisions to the Program to help increase project eligibility, streamline administrative requirements, and adjust to the downturn in the economy. Furthermore, as part of past Guideline revisions, to ensure that the Guidelines remain in sync with ARB regulations, the Board has authorized the Executive Officer to approve amendments to the Guidelines as necessary. Using this authority, the Executive Officer has approved several modifications since the Guidelines were last brought to the Board. All of the changes made since the last major Guidelines revision in 2008 are described below.

1. On-Road Voucher Incentive Program (On-Road VIP)

The On-Road VIP, originally approved for implementation in early 2009, provides a streamlined approach to reduce emissions from on-road vehicles by replacing older, high-polluting vehicles with newer, lower-emission vehicles or by installing Verified Diesel Emission Control Strategy (VDECS or "retrofit"). Air districts utilize a dealership network to help provide Carl Moyer Program funds to small fleets operating throughout California. On-Road VIP Guidelines are a stand alone document that provides implementation documents for air districts to use. Revisions to the original On-Road VIP adopted by the Board included increasing funding levels up to $45,000, increasing funding levels for trucks equipped with 0.20 grams per brake horse power-hour (g/bhp-hr) NOx emission standards, allowing the replacement of medium heavy-duty vehicles, expanding funding options based on usage, increasing the older truck's engine model year range eligible for funding from 1993 to 2002, and including retrofits as eligible for funding.

2. On-Road Vehicles

Revisions to the On-Road Fleet Modernization funding options included increasing the older truck's engine model year range eligible for funding from 1993 to 2002, increasing maximum funding amounts, reducing the required California registration period for baseline trucks, extending eligibility to trucks that previously operated as drayage trucks, increasing the maximum mileage for used replacement trucks, and reducing the minimum project life for replacements and retrofits for small fleets.

Revisions also included allowing 2-for-1 truck replacement transactions to occur, funding the replacements of medium heavy-duty trucks in addition to heavy heavy-duty trucks, increasing funding levels for trucks equipped with 0.20 g/bhp-hr NOx emission standards, and extending additional funding opportunities to trucks operating solely in NOx-Exempt areas. Contracts for on-road trucks are no longer required to include usage as long as prior usage has been verified. In addition, the maximum retrofit funding was increased to $10,000. Last, the Board directed funding towards small fleets as a result of the adoption of the Truck & Bus Regulation.

3. Off-Road Equipment

The Carl Moyer Program originally required that off-road repower projects must install the highest level ARB-verified retrofit to qualify for funding, if technically feasible. However, under the 2008 Guidelines, air districts were allowed to offer applicants an opt-out waiver of the default retrofit requirement through March 27, 2009. Subsequently, ARB allowed air districts to offer applicants the waiver indefinitely for engines that are not subject to an in-use regulation.

In addition, per SBx2 3, ARB modified the Guidelines to allow off-road farm equipment to have a minimum project life of 10 years. Also, these projects can now be funded up until a regulatory compliance date. This change affects the following source categories: Off-Road Compression-Ignition Equipment, Off-Road Large Spark-Ignition Equipment, Off-Road Equipment Replacement, and Portable and Stationary Agricultural Sources.

Last, the Board approved changes to the Off-Road Equipment Replacement funding option which expanded eligibility to include the replacement of older equipment with Tier 1 or Tier 2 engines. Revisions to the Off-Road Equipment Replacement funding option also included simplifying the method used to determine maximum equipment replacement grants, eliminating the requirement for advanced approval of an air district equipment replacement plan, and simplifying the usage documentation requirements.

4. Locomotives

Three revisions were approved for the Locomotives source category. The revisions included updating the Locomotive Fuel Consumption Rate Factors to be consistent with a U.S. EPA update released in April 2009.

The second revision corrected the example locomotive emission calculation to ensure consistency between the project activity for the baseline locomotive and the locomotive using alternative switcher technology.

Last, the Board approved a revision that allows air districts the flexibility to propose an alternative to verify project activity beyond using just fuel consumption.

5. Program Administration

A number of revisions were approved to streamline the administrative requirements of the Carl Moyer Program to better reflect the state of the economy and to streamline the process. Revisions include: modifying the usage requirement in contracts for those negatively affected by the economy, annually updating the cost-effectiveness limit and capital recovery factor to reflect consumer price index adjustments, updating the match formula to be able to adjust to changes in the levels of Carl Moyer Program funds collected, modifying the air district application process and waiving the match requirements for air districts that are only taking the minimum allocation of funding, and streamlining the fund disbursement process to minimize the number of requests from air districts for disbursements. Additional revisions included simplifying interest reporting and tracking, streamlining reporting requirements, improving cumulative tracking progress, and reducing requirements for minimum allocation and rural air districts. Finally, revisions were adopted to codify modifications and clarifications to the 2008 Guidelines.

E. Summary of Changes for 2011

The following is a summary of major changes proposed in the 2011 Guidelines.

1. Off-Road Voucher Incentive Program (Off-Road VIP)

Off-Road VIP is a new, stand-alone, funding option for air districts to implement. Modeled after the On-Road VIP, this funding option streamlines the existing off-road equipment replacement program administrative requirements. Funding will be available to help reduce the cost of replacing older, uncontrolled agricultural tractors, construction tractors, loaders, and backhoes with engines less than 175 horsepower with newer, cleaner equipment operating anywhere throughout California.

2. Emergency Vehicles (Fire Apparatus)

A new source category, Emergency Vehicles (Fire Apparatus) (Chapter 6), has been added to the Guidelines to help fund the replacement of older on-road emergency vehicles with newer, cleaner emergency vehicles. Since emergency vehicles have different fleet operational characteristics than other on-road vocations, this chapter will help fund projects that normally qualify for limited funding in the existing on-road source categories. Some examples of fire apparatus include, but are not limited to, pumper trucks, ladder trucks and tankers.

3. Lawn and Garden Equipment Replacement

Another new source category, Lawn and Garden Equipment (Chapter 14), will help owners replace older lawn and garden equipment with newer, cleaner equipment. Adding this source category will help expand air districts' existing lawn mower replacement programs. It will also allow air districts that do not currently fund lawn mower replacement programs the ability to do so. Lawn mowers will be targeted with the adoption of these Guidelines. Staff will analyze other lawn and garden equipment to be eligible for future funding.

4. Changes to Existing Source Categories

In addition to the changes discussed above, a number of other changes have been made to existing source categories.

(A) On-Road Heavy-Duty Vehicles: Changes made to the On-Road chapters include expanding funding to fleets with 10 or less vehicles and allowing applicants to verify usage by providing historic hours of operation on a case-by-case basis. Also, air districts are no longer required to have an ARB approved plan to implement Fleet Modernization.

(B) Off-Road Equipment: Changes made to the Off-Road Equipment chapters include expanding funding opportunities for small fleets by reducing the minimum project life from three years to two years. Additional flexibility will be allowed for owners to verify horsepower by using power take off to determine horsepower. Also, funding opportunities for the upcoming introduction of Tier 4 engines are addressed.

(C) Light-Duty Vehicle Retirement: Recent changes to the Bureau of Automotive Repair's (BAR) vehicle retirement program will increase the weight limitation from 8,500 pounds gross vehicle weight rating to 10,000 pounds. These Guidelines align with BAR's weight limits resulting in an increase in eligible vehicles to be retired.

(D) Finally, staff reviewed all aspects of each source category to further streamline and clarify program requirements. The Guidelines incorporate many of these minor revisions to help increase project eligibility.

5. Program Administration

These Guidelines incorporate a number of revisions that will further streamline air district administration and applicant participation in the Carl Moyer Program. These revisions include allowing air districts that track projects cumulatively to easily close out older years, add further flexibility to the air districts' ability to adjust contracts based on the economy's impact on usage, new language to assist air districts implementing projects on a case-by-case basis (except for the Voucher Incentive Programs), streamline auditing requirements of projects and grantees, and outline progressive corrective steps to help assist air districts in the event that the programmatic and fiscal elements of the program are not being met.

6. Adopted and Revised Regulations

The Carl Moyer Program funds projects that are early, or extra, to regulatory requirements. Carl Moyer Program eligibility is affected each time ARB adopts a new regulation for a source covered under the program. The 2011 Carl Moyer Program Guidelines update the project criteria for each relevant source category to reflect the new and revised regulations adopted since the previous revision to the Guidelines.

7. Public Process for Changes to the Carl Moyer Program Guidelines

ARB is required to make proposed changes to the Guidelines and is required to make those changes available to the public at least 45 days prior to final adoption. ARB is also required to hold one public meeting to consider public comments before final adoption of any changes. Although major changes to the Guidelines are adopted by the Board, the Board has delegated authority to the Executive Officer to adopt additional changes to the Guidelines that are deemed necessary in response to regulatory Board actions and to ensure that the Guidelines remain effective and up-to-date. Any changes adopted by the Executive Officer will go through the public process as described above.

8. Cost-Effectiveness Limit and Capital Recovery Factors

Cost-effectiveness is a measure of the dollars provided to a project for each ton of covered emission reductions. Statute sets a cost-effectiveness limit that projects must meet. Statute also requires that the cost-effectiveness limit be updated annually to reflect inflation.

In addition, a discount rate is used to calculate the capital recovery factors in determining the annualized cost of Carl Moyer Program grants provided for a

project. This number is based on the average annual yields for United States Treasury Securities, averaged over the 2010 calendar year, with a three-year, five-year, seven-year, and ten-year maturation. As required by statute, the cost-effectiveness limit and capital recovery factors will be updated annually through a notification posted on the website (Mail-out). Additional details on calculating cost-effectiveness limit and the capital recovery factor can be found in Appendix G: Cost-Effectiveness Limit and Capital Recovery Factor.

9. Comingling of Public Funds

These Guidelines include language that clarifies how air districts are statutorily required to review project applications that include the comingling of other public funds with Carl Moyer Program funds. Health and Safety Code section 44283 (d) and 44283 (g) require air districts to include other public funds when determining the cost-effectiveness or the incremental costs of a project. In addition, these Guidelines include language, as required by Health and Safety Code section 44287.2, which allows for the combination of Carl Moyer Program funds with funds designed to reduce greenhouse gas emissions from federal program sources or the Alternative and Renewable Fuel and Vehicle Technology Program without including them in the cost-effective calculation for the Carl Moyer Program funds. Examples of how these requirements are to be implemented are included in Appendix C.

10. Methodology Used to Determine Surplus Emission Reductions

ARB is required to develop Guidelines that help determine project eligibility that ensures projects funded purchase emission reductions which are considered "surplus" to a regulation. These Guidelines incorporate a revised methodology used to determine surplus emission reductions.

Previously, staff used the emission benefit analysis of a regulation as the benchmark for determining whether a source category project results in surplus emission reductions. For example, a regulation may require a retrofit, but the emission benefit analysis assumes fleet turnover will occur instead of the purchase of a retrofit. Therefore, turnover became the benchmark for funding.

Under these Guidelines, staff will look at the compliance dates of a regulation as the benchmark for determining whether a project results in surplus emission reductions. The emission benefits analysis is now used as a tool in determining surplus emission reductions and to guide additional policy overlays. The result of this change will increase the eligibility of projects while ensuring that all statutory requirements are met.

11. Expand Funding Opportunities to Fleets that are in Compliance with In-Use Regulations

Previously, fleets who were within an in-use regulatory compliance schedule, were allowed only one opportunity, or "one shot", at receiving incentive funds to further reduce emissions in their fleet. These Guidelines allow more than one funding opportunity for fleets after their first compliance deadline has passed as long as compliance with the in-use regulation can be demonstrated.

Chapter 2: GENERAL CRITERIA

The project criteria listed below apply to all Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) projects. Additional project criteria are located in the relevant source category chapters. In cases where the source category requirements conflict with the criteria listed below, the source category requirements will take precedence. Projects must also conform to the project application, contract, reporting, and other requirements as described in Chapter 3: Program Administration.

A. Emission reductions obtained through Carl Moyer Program projects must not be required by any federal, state or local regulation, memorandum of agreement/understanding, settlement agreement, mitigation requirement, or other legal mandate.

B. The air quality management district (air district) governing board or the Air Resources Board (ARB) rule approval date (or the promulgation date of a federal regulation) represents the cutoff date by which a Carl Moyer Program project contract must be fully executed, without needing to consider the rule in evaluating the surplus nature of the project's emission reductions. After that date, the new rule must be considered in the evaluation of a project's eligibility.

C. A grant recipient subject to an in-use regulation may be eligible to receive funding through the Carl Moyer Program if the applicant has met all compliance requirements of applicable regulations. Documentation of regulatory compliance must be provided by applicants to air districts at the time of pre-inspection.

D. Participating air districts retain the authority to impose additional more stringent requirements in order to address local concerns.

E. No emission reductions generated by the Carl Moyer Program may be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity.

F. The Carl Moyer Program will only take credit for the emission reductions achieved from a project or part of the project funded using any Carl Moyer Program incentive funds.

G. No project funded by the Carl Moyer Program may be used for credit under any federal or state emission averaging banking and trading program.

H. Engines operating under a regulatory compliance extension granted by ARB, an air district, or the United States Environmental Protection Agency (U.S. EPA) are not eligible for funding.

I. Throughout the contract term, projects funded by the Carl Moyer Program must not be used to generate credits or compliance extensions, and must be excluded when determining regulatory compliance.

J. Projects funded by the Carl Moyer Program must be included when defining the size of the fleet for determining regulatory requirements.

K. Projects must meet a cost-effectiveness limit per weighed ton of oxides of nitrogen (NOx), reactive organic gases, and particulate matter reduced as calculated in accordance with Appendix G.

L. Except for tax credits, tax deductions, public rebates, public loans, or local air district penalty funds, all other funds contributed to a project including air district local AB 923 funds, or local air district mitigation fees, and other state and local air district incentives, must be part of the cost-effectiveness calculations and must meet current cost-effectiveness limits (Health & Safety Code § 44283(d)). An example of the calculation methodology is located in Appendix C.

M. If an applicant reports other public financial incentives, the air district must deduct this amount from the total incremental costs that can be funded with Carl Moyer Program funds, except for tax credits, tax deductions, public rebates, public loans, or local air district penalty funds (Health & Safety Code § 44283(g)). An example of the calculation methodology is located in Appendix C.

N. Federal funding for programs to reduce greenhouse gas (GHG) emissions, funding provided by the Alternative and Renewable Fuel and Vehicle Technology Program, Air Quality Improvement Program, or ARB's Low Carbon Transportation Investment funds to reduce GHG emissions are exempt from the requirements in sections L and M above. For these exempt projects, grantees must provide at least 15 percent of the project cost from non-public sources.

O. Public agency applicant funds toward a project are exempt from the requirement in sections L, M, and N above. Emission reductions may not be claimed for the applicant-funded portion of the project. The sum of all grants and public funding sources shall not exceed the total project cost (Health & Safety Code § 44287.2(b)).

P. Carl Moyer Program grants can be no greater than a project's incremental cost. The incremental cost is described in each source category chapter of these Guidelines.

Q. Carl Moyer Program funds cannot be used for fuel projects; however other funds under an air district's budgetary authority or fiduciary control (e.g. match funds) may be used to pay for the incremental cost of liquid or gaseous fuel, other than standard gasoline or diesel, which is integral to a project receiving grant funding under the Carl Moyer Program. If all Carl Moyer Program criteria are met and the project is not a "fuel-only" project, the incremental cost of alternative fuel can be considered a qualified matching contribution from an air district.

R. The contract term must extend to the end of the project life.

S. The new engine/vehicle/equipment must remain in service for the project life.

T. Projects must have at least 75 percent of their total activity for the project life in California (this requirement does not apply to marine projects).

U. Potential projects that vary from the requirements of these Guidelines and do not meet all of these criteria may be approved by ARB on a case-by-case basis if the project is demonstrated to achieve real, surplus, quantifiable, enforceable, cost-effective emission reduction benefits in California for the full project life. Additional information regarding approval of case-by-case projects is found in the Program Administration chapter.

V. Carl Moyer Program projects must meet requirements applicable to that project category found in the applicable source category chapter of these Guidelines, in addition to the general criteria outlined in this chapter.

W. In general, projects must have a minimum project life of three years, but some source categories allow a project life of less than three years. Refer to the specific source category chapter for more detail.

X. Projects for which activity is based on hours of operation must include a functioning hour meter on the new engine.

Y. Project engines and retrofits may only use the fuel allowed by the engine certification or retrofit device verification during the project life. Fuel additives are not allowed to be used unless specifically identified as allowable in the engine certification or retrofit device verification.

Z. Replacement engines participating in the averaging, banking, and trading program that are certified to family emission limits (FEL) higher than the applicable emission standards, as designated on the Executive Order are ineligible to participate in the Carl Moyer Program.

AA. Replacement engines that are certified to a FEL NOx or NOx + non-methane hydrocarbons (NMHC) level that is lower than the required emission standard are eligible to be used in repower and replacement projects. However, the emission level that can be used in cost-effectiveness calculations for these engines would be the applicable emission standards and not the FEL levels.

BB. Emission reduction technologies must be certified or verified by ARB. If an ARB certification or verification process does not exist or if engines or retrofits are preempted from ARB certification/verification, then an engine or retrofit must be certified/verified to Federal standards as applicable.

CC. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

DD. Emission reduction technologies for sale in California must comply with all durability and warranty requirements.

EE. Prior to destruction, an engine that is required to be dismantled may be used as a test engine for purposes of retrofit or fuel verification. This can occur as long as the engine complies with the requirements of the guidelines, and the old engine must be destroyed before a payment to the grantee is issued for the new engine.

FF. In circumstances where projects have multiple engines per vehicle/equipment, the replacement (or repower) engines are eligible for funding. The emission benefits calculation may be based on overall vehicle/equipment cost-effectiveness and not on a per engine basis at the discretion of the air district. The project must meet the current project cost-effectiveness cap.

GG. Funding is not available for projects where a spark-ignition engine (i.e., natural gas, gasoline, etc.) is replaced with a diesel engine.

HH. For a new purchase, engine(s) must be certified by ARB to reduce NOx emissions by at least 30 percent more than the current NOx emission standard. This criterion also applies to locomotives with the exception that the engine(s) must be certified by U.S. EPA. For marine vessel new purchases, refer to chapter for specific criteria.

II. For repower and replacement projects, the replacement engine must achieve an annual NOx emissions benefit of at least 15 percent.

JJ. Retrofit projects that reduce NOx emissions must be verified by ARB to a NOx reduction level of at least 15 percent from the baseline engine to claim NOx reductions from the project.

KK. No public monies are allowed for the support of any sectarian or denominational school, or any school not under exclusive control of the officers of the public schools.

LL. These 2011 Guidelines must be used for all projects funded with fiscal year 2011-2012 (Carl Moyer Program Year 14) and subsequent years' funds. For projects funded using fiscal year 2010-2011 funds (Year 13), or any previously awarded funds, an air district has the option of using either the 2008 Guidelines (and relevant Program Advisories and Mail-Outs) or using these 2011 Guidelines. Air districts may not pick and choose requirements from both sets of Guidelines. The 2011 Guidelines may be utilized after the Board approval date and would apply to projects for which contracts have been fully executed after the Board approval date. If an air district chooses to begin applying the 2011

Guidelines to projects, it must continue to apply only the 2011 Guidelines to all subsequently funded projects. ARB will follow these 2011 Guidelines for administration of the Carl Moyer Program following Board approval.

MM. The revised cost-effectiveness limit and capital recovery factors may be used by air districts once the Board adopts the 2011 Carl Moyer Program Guidelines, but must be used by July 1, 2011. As required per statute, ARB will update the cost-effectiveness limit and capital recovery factors annually through a Mail-Out.

NN. Contracts executed after the adoption date of a regulation must consider all applicable regulations when determining eligibility for a project. If an existing contract is amended to increase the total Carl Moyer Program funding of the project, then the air district must reevaluate eligibility and consider all applicable regulations. If the total dollars do not increase, then the air district does not need to reevaluate eligibility.

OO. For a repower project, the installation of the engine must be completed in a manner such that it does not void the engine warranty provided by the manufacturer and any remaining warranty provided by the equipment/ vehicle manufacturer.

PP. Any funds earned or collected by the air district through Carl Moyer Program resources must be reported and either returned to ARB or spent on the air district's Carl Moyer Program. The Carl Moyer Program does not require Districts to earn funds through its program actions. Districts are not expected to base business decisions on their ability to generate returns or collect funds through program activity.

QQ. Any Carl Moyer grant funds lost due to air district investment choice will be replaced by the air district. Air Districts are free to designate the type of storage account based on their business needs.

Chapter 3: PROGRAM ADMINISTRATION

A. Background

The responsibilities of the Air Resources Board (ARB) include the management of program funds and program oversight. This chapter is divided into discrete sections that describe specific administrative requirements that ARB, air districts, and interested parties must follow to ensure the Carl Moyer Program achieves the State Implementation Plan (SIP)-creditable emission reductions. Air districts may choose to require more stringent administrative procedures in implementing their local program. Some source category chapters give additional administrative requirements. In cases where the source category requirements conflict with the requirements specified in this chapter, the source category requirements will take precedence.

These 2011 Carl Moyer Program Guidelines (Guidelines) must be used for all projects funded with fiscal year 2011-2012 (Carl Moyer Program Year 14) and subsequent years' funds. Carl Moyer Program Year 1 is defined as fiscal year 1998-1999 (e.g. July 1 – June 30) to signify the inception of the program beginning in 1998.

For projects funded using fiscal year 2010-2011 funds (Year 13), or any previously awarded funds, an air district has the option of using either the 2008 Guidelines (and the subsequent relevant Program Advisories and Mail-Outs) or using these 2011 Guidelines. Air districts may not pick and choose requirements from both sets of Guidelines. The 2011 Guidelines may be utilized after the Board approval date and would apply to projects for which contracts have been fully executed after the Board approval date. If an air district chooses to begin applying the 2011 Guidelines to projects, it must continue to apply only the 2011 Guidelines to all subsequently funded projects. ARB will follow these 2011 Guidelines for administration of the Carl Moyer Program following Board approval.

B. ARB Solicitation of Program Fund Availability

1. Initial Allocation: Each year, ARB shall send a solicitation letter to each air district's Air Pollution Control Officer (APCO) to notify the air districts that Carl Moyer Program funding is available and to provide the application that air districts need to apply for program funds. The solicitation letter shall provide each air district's tentative funding award and tentative match funding requirement. ARB shall determine the tentative awards for each year's grants or, when necessary, reallocation of returned funds in accordance with Health and Safety Code section 44299.2. The process and minimum requirements for distribution of these funds is described in Sections C through G of this chapter. The typical timeline for each initial allocation funding cycle is provided in Table 3-1.

Table 3-1
Timeline for Initial Allocation of Funds

Date	Action
Early December	ARB sends application packet to air districts
By end of January	Air districts apply to ARB for funds
Mid-March	ARB notifies air districts of final awards
By end of April	Air districts return signed grant agreements
June 30 of Following Year	Target date for contracts to be executed
June 30 of Second Year	Deadline for air districts to receive fund disbursements. Target date for funds to be expended.
June 30 of Fourth Year	Deadline for air districts to liquidate funds

2. Reallocation: If returned funds are available after each expenditure deadline (see also Section S), ARB shall send a solicitation letter to each air district's APCO to notify the air districts that such funds are available and to provide the application and instructions that the air districts need to apply for the funds. The timeline for a reallocation funding cycle is provided in Table 3-2.

Table 3-2
Timeline (Deadline) for Reallocation of Funds

Date	Action
August 29	Deadline for air districts to report and return unexpended funds to ARB
September 28	ARB notifies air districts of available returned funds
November 27	ARB allocates returned funds to eligible air districts
December 31	Deadline for air districts to accept or decline reallocated funds
November 27 of the following year	Reallocated funds must be expended within one year of the allocation

3. "State Reserve (e.g., Multi District)": ARB reserves the right to direct up to ten percent of each year's State Carl Moyer Program funds to eligible projects selected in accordance with Health & Safety Code section 44286(d).

C. Air District Applications for Program Funding

1. Air districts must submit a completed application packet within 60 calendar days from the date of the solicitation letter.

2. The completed application packet must include the following documents:

   (A) Completed Application: Submission of the original form signed by the air district's APCO. Air districts requesting the minimum $200,000 allocation may opt to direct their allocation to the Rural District Assistance Program.

(B) Match Fund Commitment: Air districts must specify the source and amount of local match funding on the application. Air districts requesting more than their tentative funding allocation must demonstrate that sufficient match funds are available to cover any additional funds requested. Refer to Section I to determine the required match fund amount if requesting additional funds. Air districts requesting no more than the minimum allocation of $200,000 will be exempted from the match requirement. Air districts may account for up to15 percent of their match requirement with in-kind contributions. Additional information regarding allowable sources of match funding can be found in Section I of this chapter.

(C) Air District Board Resolution: Submission of the air district Governing Board resolution or minute order that commits the air district to participate in the Carl Moyer Program, comply with the Carl Moyer Program requirements, and authorizes the air district to accept funds from ARB or to have such funds placed into the Rural District Assistance Program is required. For air districts with a match requirement, the board resolution shall authorize the APCO to supply sufficient funding to meet the match requirement. If an air district has previously obtained a board resolution that authorizes the air district to implement the Carl Moyer Program for multiple years, the air district must state the date of the resolution in the application.

(D) Policies and Procedures Manual: In order to be eligible for continued funding, an air district must submit to ARB a copy of their current Carl Moyer Program Policies and Procedures Manual for approval. If previous approval has been provided by Carl Moyer Program staff, the air district must instead submit a statement, signed by an air district representative, confirming that an updated version of their Policies and Procedures Manual is maintained at the air district office. The manual must describe the air district's policies, procedures, and organizational structure for implementing the Carl Moyer Program. The Policies and Procedures Manual, at a minimum, must include:

(1) Program structure and organization, including coordination with ARB.
(2) Solicitation of funds from ARB.
(3) Project solicitation, evaluation, and selection (including schedule for program implementation).
(4) State and match fund expenditure and liquidation.
(5) Fiscal practices and procedures.
(6) Pre- and post-inspections.
(7) Project reports.
(8) Contract components and contracting with applicants.
(9) Invoice review, approval, and payment protocols.
(10) Air district audits of projects.
(11) Details regarding program components identified in the following sections of this chapter: K.5., L.3., W.8., W.10., X.6., Z.2., Z.5., Z.6., AA.1., AA.4., BB.6., CC.3., and EE.5..

(12) Environmental justice/at-risk communities (if applicable).
(13) Light duty vehicle/fleet modernization projects (if applicable).

D. The Rural District Assistance Program

1. Rural air districts may use the Rural District Assistance Program (RAP) which provides the ability to pool their project funds in order to streamline program administration. Funds dedicated to RAP are pooled to fund project grants from a statewide list of rural air district projects.

2. Solicitation, initial project application review and ranking, and assignment of a project to an air district may be done by the California Air Pollution Control Officer's Association (CAPCOA). Additionally, CAPCOA may contract with one or more third parties (RAP administrator) to conduct these tasks. CAPCOA is responsible for selecting the RAP administrator. Projects are assigned to recipient air districts prior to contract execution. Recipient air districts have the authority to refuse or accept projects offered through RAP within a time period designated by CAPCOA.

3. An air district whose annual Carl Moyer Program grant application dedicates the entire annual grant to RAP is not required to have a current approved Carl Moyer Program Policy and Procedure Manual, but the grant application must include a board resolution or minute order authorizing dedication of the funds to RAP. Air districts dedicating their entire grant are not obligated to submit a yearly report for the associated grant.

4. An air district may dedicate funds to RAP after it has executed an annual grant with ARB, but must do so by March 1st prior to the end of the grant funding cycle, per the following example timeline:

Example:
CMP Year 18 (Fiscal Year 2015-2016)

January–April 2016	Air district applies for funds and executes Year 18 Grant Agreement; funds may be designated to RAP
March 1, 2018	Deadline to redirect funds to RAP
June 30, 2018	Deadline for air districts to receive fund disbursements. Target date to expend Year 18 grant award
June 30, 2020	Deadline to liquidate Year 18 grant award

However, funds that have been disbursed to districts and subsequently returned to ARB will be treated as returned funds, and reallocated as specified in Section S.

5. An air district receiving RAP projects and funds must have a current approved Carl Moyer Program Policy and Procedures manual. Following project acceptance, the air district is fully responsible for all grant obligations, including eligibility verification, contract draft and execution, inspections, monitoring and reporting. RAP projects will be subject to review as part of the Incentives Program Review ("Program Review" or "review") of the implementing air district.

E. ARB Review and Approval of Air District Funding Applications

1. ARB shall review an application immediately upon receipt and, if necessary, provide the air district with a written explanation of what is missing from the application within 10 working (business) days of its receipt. Complete applications that fulfill all criteria shall be approved no later than 60 business days after receipt as identified in Health and Safety Code section 44287(n).

2. ARB may elect to approve an application that is missing a particular item and make the submittal of that item a stipulation of the Grant Agreement. For example, sometimes air district staff are unable to obtain a board resolution or minute order before the application deadline. In such a case, ARB may allow a board resolution or minute order to be submitted with the signed Grant Agreement or prior to the air district's initial disbursement.

3. ARB shall review an air district's Policies and Procedures Manual for minimum elements listed in Section C.2. of this chapter and within 30 days of its receipt either approve the manual or describe what additional information or clarification is needed. ARB approval of an air district's Policies and Procedures Manual shall be provided by email or in other written format. Once approved, the air district must submit a statement that an updated version of their Policies and Procedures Manual is maintained on-site. In this case, an annual submittal of their Policies and Procedures Manual with the application for funding is no longer required. ARB approval of an air district's Policies and Procedures Manual denotes approval of the air district's policies and procedures as written. An air district's policies and procedures as implemented can only be fully evaluated during the Program Review process.

4. ARB shall follow the formula identified in Health and Safety Code section 44299.2(c) to redistribute funds declined by air districts. See Section S. of this chapter regarding the return and reallocation of unexpended funds.

F. Final Grant Awards

1. Once air districts applications have been approved, ARB shall determine the final grant awards and corresponding amounts of required match funding.

2. ARB shall prepare and submit two signed original copies of the Grant Award and Authorization Forms to qualifying air districts.

3. The APCO must sign both original copies of the Grant Award and Authorization Form. The air district retains one of the originally signed forms for their files and returns the other originally signed form to ARB.

4. The deadline for acceptance of an annual grant award shall be specified in the award letter each year. The deadline for acceptance of a reallocation grant award shall be December 31 of each year.

5. Air districts have until June 30 of the fourth calendar year after full grant execution to liquidate the grant award.

6. For a reallocation grant award, air districts have one year from the date of allocation to expend the funds. See Section B of this chapter – Table 3-2.

G. Fund Disbursements to Air Districts

1. In order to receive a disbursement, each air district must submit a Grant Disbursement Request to ARB. The Grant Disbursement Request form must be signed by a party authorized and designated by the air district's Governing Board.

2. If there are stipulations on the Grant Award and Authorization form, all stipulations must be met before ARB will disburse funds associated with the grant award.

3. Protocol and minimum requirements for air districts to receive disbursements are as follows:

   (A) Initial Disbursement: An air district may request an initial disbursement that includes all of its administrative funds and up to ten percent or $200,000 of its project funds, whichever is greater. Minimum allocation air districts may request up to their entire allocation of $200,000. An air district has the option to request additional project funds to be included in the initial disbursement if they can meet and demonstrate all the criteria described in Section G.3.(B).

   (B) Additional Disbursements: Air districts may request any remaining portion of their project funds once the following criteria have been met and submitted to ARB:

      (1) a. The preceding Yearly Report demonstrates both on-time expenditures and on-time liquidation consistent with Health and Safety Code section 44287(j).

      - or -

      b. The preceding Yearly Report does not demonstrate on-time

liquidation consistent with Health & Safety Code section 44287(j) and any funds not liquidated by the four-year deadline have been received by ARB. NOTE: ARB will not request a return of any funds under contract, but may require a district to reassign funds liquidated from more recent years to the year due for liquidation.

(2) Program staff submission of document(s) listing eligible projects in an amount equal to the disbursement request, and confirming the air district's commitment of Carl Moyer Program funds to those projects.

(3) Program staff certification that an executed contract will not be entered prior to project being approved by the APCO or Board approved designee (for those air districts not requiring Board action) or air district Board (for those air districts requiring Board approval of projects) as consistent with their Policies and Procedures Manual.

(4) Air districts will receive one check for both program administration and project funds, but must account for the administration and project funds separately.

4. Due to the compressed timeframe for expending reallocated funds, air districts may receive the full reallocation grant award once the following has been submitted and approved by ARB:

(A) An original signed copy of the reallocation grant award.

(B) A completed disbursement request form.

H. AB 923 - $2 Motor Vehicle Fee

1. State law allows air districts to collect an additional $2 motor vehicle registration surcharge (MV Fee) (Health & Safety Code § 44223 which must be used to fund the following (Health & Safety Code § 44229(b)):

(A) Projects eligible for grants under the Carl Moyer Program.

(B) The Agricultural Assistance Program.

(C) An accelerated vehicle retirement or repair program that is adopted by ARB.

(D) Onboard natural gas tank replacements in existing school buses or the enhancement of deteriorating natural gas fueling dispensers of fueling infrastructure pursuant to the Lower-Emission School Bus Program adopted by the Board.

(E) Alternative fuel and electric infrastructure projects solicited and selected through a competitive bid process.

(F) Purchase of new school buses or the repower or retrofit of emissions control equipment for existing school buses pursuant to the Lower-Emission School Bus Program adopted by the Board.

2. $2 MV Fees used to meet the Carl Moyer Program match fund requirement (See Section I) are subject to the same eligibility, reporting, review and auditing requirements as State-provided Carl Moyer Program funds. $2 MV Fee funds used to meet the match requirement are not required to be expended within two years from the date of their collection. However, air districts must expend sufficient match funds to meet the obligations for the Carl Moyer Program funds received each year.

3. Reporting and oversight of the $2 MV Fee depends upon whether the fee is used to meet the Carl Moyer Program's match requirement and whether the air district takes SIP credit for $2 MV Fee projects. Table 3-3 summarizes the various scenarios for treatment of $2 MV Fee funds and projects. Sections R and U.6. of this chapter, respectively, describe reporting and oversight on the $2 MV Fee in more detail.

Table 3-3
Summary of $2 MV Fee Requirements and Oversight

Requirements/ Oversight	$2 MV Fee Used as Match	$2 MV Fee Used for SIP Credit	$2 MV Fee Not Match/ not SIP
Liquidation of funds within four years	(1)	--	--
Meet full and complete Carl Moyer Program Guideline criteria	√	--	--
Subject to ARB Program Review	√	--	--
Subject to ARB project eligibility evaluation (e.g., cost-effective and surplus)	√	√	√
Fiscal reporting to ARB (list total funds expended in seven basic categories)[2]	√	√	√
Detailed reporting to ARB (project specifics submitted in current database)[2]	√	√	--

[1] Sufficient funds must be liquidated, regardless of their year of origin or source, to provide the required match by that year's liquidation deadline. For example, for Year 18, air districts must complete liquidation of applicable Year 18 match funds by June 30, 2020. When those funds were received is not a factor in determining this deadline.

[2] See Section R of this chapter for details.

I. Air District Match Funds

1. Health and Safety Code section 44287 requires air districts participating in the Carl Moyer Program to provide match funding. Air districts implementing the Carl Moyer Program must commit match funds equaling 15 percent of the State funds received.

2. An air district receiving the minimum grant award of $200,000 is exempt from this match requirement.

3. Air district match funds must be under the air district's budget authority or fiduciary control, with the exception of port funds (Health & Safety Code § 44287(e)) described in Section I.9. Funds allocated to an air district by the State of California, such as Lower-Emission School Bus Program Funds or State bond funds, may not be used as Carl Moyer Program match funding. Air districts may meet their matching fund requirement on an overall program basis rather than a project-by-project basis. In other words, air districts do not need to provide match funds towards each project funded, but must fund enough projects (in total or in part) with match funds in order to meet the match requirement.

4. An air district may include match funds spent on or after February 25, 1999 that would have qualified as matching funds but were not previously claimed as matching funds (Health & Safety Code § 44287(h)).

5. Motor vehicle registration surcharge fees, including the AB 2766 $4 MV Fee, and the AB 923 $2 MV Fee, may be used as match funds subject to the following provisions:

   (A) Match funds must fund projects that meet the Carl Moyer Program criteria.

   (B) Motor Vehicle Fees that pay for incremental fuel costs consistent with Section J.1.(B) and J.1.(C) of this chapter may be used as match funds. Fuel must be dedicated to a source category potentially eligible for Carl Moyer Program funds (such as heavy-duty trucks).

   (C) MV Fees that pay for accelerated light-duty vehicle retirement and repair and lawn and garden programs that meet all Carl Moyer program criteria may be used as match funds.

   (D) MV Fees used to fund Lower-Emission School Bus Program projects may count towards the air district match requirement if the projects meet the Carl Moyer Program requirements.

   (E) $2 MV Fees used to fund Agricultural Assistance Program projects may not be counted towards the Carl Moyer Program match requirement (Health & Safety Code § 44287(j)).

6. Other (non-MV Fee) locally-generated funds may be counted as match if they fund projects that meet all Carl Moyer Program requirements and criteria, including those project types described in Section J.1.(A) through J.1.(C).

7. Air districts may use federal funds as Carl Moyer Program match if written confirmation is received from the administering federal agency (for example, the United States Environmental Protection Agency) that 1) the administering agency has no objection to the air district using those funds as match, and 2) the emission benefits obtained from those funds will not be used by the administrating agency in a State Implementation Plan. The air district must also ensure that it will not use such funds as match for any other program and that the use of the funds as Carl Moyer Program match does not conflict with any State or local requirements regarding the funds. Also, like all match funds, such funds must meet all Carl Moyer Program Guideline requirements. If this option is used, supporting documentation must be included in all relevant project files.

8. Interest or other funds earned on Carl Moyer Program funds received from ARB must not be used for match funding. See Section K for more information on earned interest.

9. Funding provided by a port authority or a local government for a qualifying project or for infrastructure that serves a qualifying project may count toward the air district's Carl Moyer Program matching fund requirement. Matching funds provided by a port authority or a local government shall not exceed 30 percent of the total required matching funds in any district that applies for more than
$300,000 of the state board funds (Health & Safety Code § 44287(e)). Port authorities may participate through projects involving their own equipment, or by soliciting port tenants to apply for project funding.

10. Per Health and Safety Code section 44287(e), only an air district, or a port authority, or a local government teamed with an air district may provide matching funds. Private companies are not allowed to provide match funding to satisfy the air district's match funding obligation.

J. Eligible Types of Match Projects

1. The types of projects that can be funded to meet the match funding requirement include:

   (A) Carl Moyer Program Projects: Match funds may be used to pay for any project that meets all Carl Moyer Program criteria and all other statutory limitations on the funds such as those specified in Section I.6. of this chapter.

   (B) Incremental Fuel Cost: Match funds may be used to pay for the incremental cost of liquid or gaseous fuel and electricity, other than standard gasoline or

diesel, which serves a Carl Moyer Program-eligible source category (such as heavy-duty trucks).

(C) Infrastructure Projects:

(1) Match funds may be used for electric and alternative fuel infrastructure projects that serve Carl Moyer Program qualifying project categories.

(2) Motor vehicle fees authorized under Assembly Bill (AB) 2766 and AB 923 can be used to fund infrastructure projects that serve Carl Moyer Program qualifying project categories. However, of these, only infrastructure projects that serve Carl Moyer Program qualifying motor vehicle project categories can be counted towards the air district's match requirements. Table 3-4 in Section I lists eligible and ineligible motor vehicle project types.

2. In-Kind Contributions: Up to 15 percent of an air district's match requirement may be fulfilled through in-kind contributions (Health & Safety Code § 44287(h)). Air districts may use any funds under their budget authority -- except for Carl Moyer Program administrative funds and interest or other funds earned on Carl Moyer Program funds -- to cover their in-kind contribution. When using air district funds for in- kind match, air districts must follow all relevant statute, guidelines, and other legal requirements for expending such funds. In-kind contributions have the same expenditure timeline as match funds. Air district in-kind match funds spent on program administration and outreach must meet the documentation requirements identified in Section L.

3. Air districts found by ARB to have funded ineligible projects must substitute eligible projects, using eligible match funds as describe in Section I, equal to the amount found ineligible.

K. Earned Interest

1. Interest or other funds earned on Carl Moyer Program funds must be reported to ARB. The funds earned must either be used to fund projects that meet the current Carl Moyer Program Guidelines (including any revisions in effect at the time of contract execution) or be returned to ARB.

2. Calculation of Earned Interest: All air districts must maintain accounting records (e.g., general ledger) that track interest earned and expended on Carl Moyer Program funds.

(A) If an air district maintains its Carl Moyer Program funds in a non-segregated account, the air district must maintain accounting records that track the revenue, expenditures, and interest earned by the Carl Moyer Program funds separately from other air district programs.

(B) The calculation of interest must be based on an average daily balance or some other reasonable and demonstrable method of allocating the proceeds from the fund back into the program.

(C) Each air district's methodology for calculating Carl Moyer Program interest must be consistent with how it calculates earned interest for its other fiscal programs.

3. Expenditures for Carl Moyer Program Projects: All projects funded with interest or other funds generated through the Carl Moyer program must meet all the Carl Moyer Program Guidelines current at the time of contract execution, including any revisions to those Guidelines in effect at the time of contract execution.

4. Expenditures for Program Administration: An air district can use up to 6.25 percent of earned interest or other funds generated through the Carl Moyer Program on administrative expenses if the air district has one million or more inhabitants and up to 12.5 percent of earned interest on administrative expenses if the air district has less than one million inhabitants, in accordance with Health and Safety Code section 44299.1.

5. Reporting Requirements: Each air district must report on interest and other funds generated through the Carl Moyer program in Yearly Reports to ARB using the format provided by ARB.

   (A) Air districts must report on projects funded with earned interest or other funds earned through the Carl Moyer program the same way air districts report on Carl Moyer Program-funded projects (i.e., by entering projects in the CARL and in their Yearly Reports). The Carl Moyer Program does not specify that Air Districts perform any program actions in such a way that they generate proceeds or returns on Carl Moyer Program business.

   (B) In the 2010 Yearly Report, for the period of July 1, 1998, through June 30, 2010, air districts reported interest earned on Carl Moyer Program, Rural District Assistance Program, and Multi-district fund balances by listing the following:

      (1) Earned interest that was liquidated on Carl Moyer Program projects.

      (2) Earned interest that was expended on Carl Moyer Program administration.

      (3) Balance of earned interest held by the air district on June 30, 2010, including those interest funds committed to projects but not yet liquidated. For this balance, air districts were provided the following options:

a. Spend that amount on Carl Moyer Program projects and administration (consistent with Section K.3. and K.4.) on the same schedule as the air district's Year 13 Carl Moyer Program grant award. For reporting purposes, such interest funds were added to the Year 13 Carl Moyer Program funds and counted in the Year 13 cumulative contract execution and fund expenditure targets tracked by clean air reporting log (CARL).

- or -

b. Return unspent interest to ARB by October 31, 2010.

- or -

c. A combination of (a.) and (b.).

(C) Beginning with the 2011 Yearly report (due on August 29, 2011), and for each Yearly Report thereafter, air districts must report interest earned during the previous fiscal year (i.e. July 1 through June 30). Beginning with the 2014 Yearly report (due August 29, 2014), and for each Yearly Report thereafter, the same policy applies to any other funds generated through the Carl Moyer program. For such interest and other funds earned the previous fiscal year, air districts may choose from the following options:

(1) Add the earned funds to the next funding year and spend it on Carl Moyer Program projects and administration (consistent with Section K.3. and K.4.) on the same schedule as other Carl Moyer Program funds in that funding year. For example, funds earned during fiscal year 2010- 2011 (Moyer Year 13) may be added to an air district's 2011-2012 (Year 14) funds, placing those interest funds under the same contract execution and expenditure schedule as other Year 14 funds.

L. or -

(2) Return the funds to ARB by October 31 of the same year as the relevant Yearly Report. For example, interest earned during fiscal year 2010-2011 (Moyer Year 13) and reported in the 2011 Yearly Report should be returned to ARB by October 31, 2011.

- or -

(3) A combination of (1) and (2).

6. Interest and Other Earned Funds Documentation: Documentation of earned interest and other earned funds must be retained, at a minimum, until the liquidation deadline of the funding target with which it is associated (e.g., for

funds earned from 6/30/2010 - 6/30/2011 and added to the Year 14 target, the funding year liquidation deadline is June 30, 2016). Documentation of projects funded with earned funds (i.e., the project files) must be retained for a minimum of two years after the end of the contract term or a minimum of three years after final payment, whichever is later.

L. Program Administration and Outreach Funding

1. Air District Funding: Air districts with one million or more inhabitants may use up to 6.25 percent of their Carl Moyer Program funds on program outreach and administration (Health & Safety Code § 44299.1(c)), while air districts with under one million inhabitants may use up to 12.5 percent of their Carl Moyer Program funds (Health & Safety Code § 44299.1(d)).

2. Allowable Costs: Administrative funds must be used for Carl Moyer Program administration and outreach such as: air district staff time; consultant fees; printing, mailing, and travel costs; project monitoring and compliance expenses; and indirect costs such as general administrative services, office space, and telephone services.

3. Required Documentation: Air districts must maintain documentation of Carl Moyer Program funds used for administration and outreach. Air districts must keep the following documentation:

   (A) Personnel documentation must make use of timesheets or other labor tracking software. Duty statements or other documentation may also be used to verify the number of staff and actual hours or percent of time staff is devoted to Carl Moyer Program administration and outreach.

   (B) Consultant fees must be documented with copies of the consultant contract and invoices.

   (C) Printing, mailing, and travel expenses must be documented with receipts and/or invoices.

   (D) If travel and per diem expenses are used to document program administrative costs, allowable travel costs and per diem rates must be described in the air district's Policies and Procedures Manual. Air district travel cost criteria must be consistent with the air district's written travel policies for other air district programs. Alternatively, if these definitions are included in local administrative code or other documents, the air district may cite the document that governs its practices in the Policies and Procedures Manual.

   (E) Indirect cost calculation methodologies, if used to determine indirect costs of program administration, must be fully described or referenced in the air district's Policies and Procedures Manual. Air districts must maintain

documentation for all costs referenced in the indirect cost calculation formula.

4. The documentation, records, and referenced materials described in Section L.3. must be made available for review during ARB or other State agency monitoring visits, reviews and audits. Such administrative records for a given funding year must be retained, at a minimum, until the applicable funding year liquidation deadline [e.g., for Year 13 (fiscal year 2010-2011) funds, the funding year liquidation deadline is June 30, 2015].

5. Air districts that charge unallowable costs for program administration or outreach must substitute eligible administration and outreach expenses equal to the dollar amount found ineligible, or return the funds for the unallowable cost to ARB as mitigation or returned funds.

M. Commitment of Project Funds

Funds are considered to be committed to a project when the air district officially selects an eligible project for funding through any of the following actions:

1. The contract between the air district and the owner is fully executed.

2. The air district's governing board approves a project for funding through a resolution, minute order, letter or other written instrument.

3. The APCO or other Board-authorized representative sends the successful applicant a project offer letter.

4. The air district inputs into CARL project details from applications it has determined are eligible for funding.

5. Program staff submits a list of eligible projects confirming the air district's commitment to fund these projects.

N. Progress Tracking: Contract Execution

1. Air districts shall make every effort to have all Carl Moyer Program funds associated with the funding year one calendar year prior as well as any other funds in the applicable funding target (see Section Q.2.) under executed contract by June 30th of each year. Thus, for example, all funds awarded Year 13 (fiscal year 2010-2011) should be under executed contract by June 30, 2012.

2. Match funds should be under executed contract by the same contract execution deadline as the Carl Moyer Program funds with which they are associated regardless of the date such funds were collected by the air district.

3. For Carl Moyer voucher programs, the voucher issue date will be used to gauge progress in contract execution.

O. Progress Tracking: Fund Expenditure

1. Air districts shall make every effort to expend all Carl Moyer Program funds, including match funds, associated with the funding year two calendar years prior, as well as any other funds in the applicable funding target, by June 30 of each year (see Section Q.2.). For example, funds awarded in Year 16 (fiscal year 2013-2014) should be expended by June 30, 2016.

2. All funds under a project's contract are considered expended for the purposes of progress tracking under the following conditions:

   (A) The project is liquidated per Section P.2.

   - or -

   (B) An invoice for the project has been fully or partially paid by the air district consistent with Section BB and such invoice payment covers the grant amount for at least one operational new engine, vehicle, or piece of equipment under the project's contract. See Chapters 10 (Portable and Stationary Agricultural Sources) and 12 (Marine Vessels) for specific exemptions for electric agricultural irrigation pump motors and shore-side shore power projects, respectively.

3. Any funds associated with an engine, vehicle, or piece of equipment cancelled from a contract prior to the liquidation of the contract as a whole will no longer be considered expended beginning at the time of the cancellation.

P. Progress Tracking: Fund Liquidation

1. Funding Year Liquidation
   By June 30th of each year, air districts must have liquidated all Carl Moyer Program funds associated with the funding year four calendar years prior as well as any other funds in the applicable funding target (see Section Q.2.). For example, funds awarded Year 13 (fiscal year 2010-2011) must be liquidated by June 30, 2015. The exception is funds awarded Year 8 (fiscal year 2005-2006); such funds must be liquidated by June 30, 2011.

   (A) Match funds must be liquidated by the same liquidation deadline as the Carl Moyer Program funds with which they are associated regardless of the date such funds were collected by the air district.

   (B) A funding year that has been liquidated by an air district and all associated projects will be removed from cumulative tracking.

(C) At ARB's discretion, a funding year adjustment to a later, un-liquidated funding year may be made to correct for errors discovered in an earlier, liquidated, funding year.

(D) For purposes of progress tracking, ARB considers Years 1-7 (fiscal years 1998-1999 through 2004-2005) to be liquidated. All projects associated with those funding years must remain associated with them; i.e., such projects are no longer available for use in cumulative tracking and cannot be counted in later funding years. Any air district with knowledge of un-liquidated funds from such funding years must notify ARB and take appropriate actions such as returning those funds to ARB or, at ARB's discretion, make a funding year adjustment to a later, un-liquidated funding year.

2. Individual Project Liquidation

(A) A project's funds are considered to be liquidated for the purpose of progress tracking if all invoices associated with the project under contract have been paid.

(B) For completed projects for which all invoices have been paid except for a small amount withheld for making progress payments, both the paid funds and the withheld funds will be considered liquidated for the purpose of progress tracking. Such progress payments, if used, must be covered in the project's contract and in the air district's policies and procedures manual. Withheld progress payments considered to be liquidated per this section that are not ultimately paid to the grantee due to non-performance must be treated like other recaptured funds consistent with Section P.2.(C).

(C) Funds that have been liquidated on a given project but are later returned to the air district are considered recaptured funds. For the purposes of progress tracking, such funds will still be considered to be liquidated with regard to the original project, but will be added to the contract execution, expenditure, and liquidation targets of the current funding year as a funding year adjustment when the funds are returned.
For example, if Project X is liquidated in 2010 but in February 2012, the grantee opts to end the contract early and pays the air district back a prorated amount of the grant, for tracking purposes the funds associated with Project X are still considered to be liquidated in 2010. However, the amount paid back to the air district is added as an adjustment to the air district's Year 14 (fiscal year 2011-2012) targets.

(D) Per Section Y.5.(A), each project's contract must be liquidated within four years from the original date of contract execution. Under no circumstances may the liquidation date be extended beyond four years from the original

date of contract execution.

3. Administrative fund liquidation. Administrative funds associated with a grant must be liquidated by the liquidation deadline requirement for the grant consistent with Health and Safety Code section 44287(j). For example, administrative funds associated with the Year 16 grant (fiscal year 2013-2014) must be liquidated by June 30, 2018.

Q. Cumulative Progress Tracking

1. ARB shall track, cumulatively, an air district's progress in meeting program milestones to execute contracts and expend funds. Funds associated with a given funding year must be fully accounted for; however, contract execution and expenditure milestones may be met on a cumulative basis. For example, an air district demonstrating expenditure of Year 16 funds by June 30, 2016 may include Year 17 funds expended early in place of Year 16 funds not yet expended.

2. To assist participating air districts with cumulative tracking, ARB shall maintain in the CARL database appropriate progress tracking targets for each participating air district for each funding year. These funding targets shall list the total funds required to meet given milestones such as contract execution, fund expenditure, and funding cycle liquidation. Such tracking targets shall include, as appropriate, Carl Moyer Program grant funds (including State Reserve funds awarded pursuant to Health and Safety Code section 44286(d), Rural District Assistance Program funds, and Carl Moyer voucher program funds), required match funds, interest funds, reallocated funds, recaptured funds, and any other relevant funds associated with the Carl Moyer Program.

3. ARB will adjust progress tracking targets to account for the movement of funds into and out of an air district's account (i.e., funds donated to or received from RAP), for in-kind match, for interest spent on administration, or as otherwise needed.

R. Yearly Report

1. ARB shall send air districts a copy of the appropriate Yearly Report template to fill out, or make the report template available on ARB's website. The Yearly Report template shall include instructions for the report's completion and shall be made available to air districts by June 30.

2. Air districts must submit the Yearly Report on or before August 29th. This report must provide information regarding projects associated with funds received that are under executed contract as of June 30th of that year. Air districts that dedicate their full allocation to the Rural District Assistance Program are not required to report regarding those funds.

3. The Yearly Report must include the following information:

   (A) Project details sufficient to populate the data fields in the CARL database for each Carl Moyer Program project, including match fund projects, projects funded with earned interest, and AB 923 $2 MV Fee projects claimed for State Implementation Plan credit. To provide such project details for the Yearly Report, air districts must update all of their project information in the CARL database and must ensure that all information in CARL is complete, correct, and supported by relevant documentation (e.g., executed contracts and project invoices) maintained by the air district.

   (B) Quantitative information regarding progress through June 30th on reaching program milestones such as contract execution, fund expenditure, and funding cycle liquidation, as tracked cumulatively. An air district may waive contract execution reporting requirements if the air district is covered by a contingency plan to move uncommitted funds to RAP or to a partnering air district no later than March 1 prior to the expenditure deadline of the funding cycle (e.g., by March 1, 2011, for Year 11 funds, which have a June 30, 2011, expenditure deadline). Contingency plans must receive air district board approval. Contingency plans involving participation of multiple air districts must be described in a memorandum of understanding (MOU) approved by all participating air district boards.

   (C) The APCO, Chief Financial Officer (CFO), and Carl Moyer Program Administrator must sign and certify that the project and fiscal information contained within the Yearly Report is, to the best of their knowledge, accurate and complete. The air district Board may designate an alternate for the CFO; however, the designated alternate must be someone in addition to the APCO or Program Administrator, therefore ensuring certification of the report by more than one person. Submission of executed contracts and/or project invoices to ARB is not required. Physical documents are to be maintained at the air district office and made available to ARB upon request.

   (D) A brief narrative specifying any enforcement actions taken and/or any funds recaptured from liquidated projects.

   (E) Amount of interest accrued on State Carl Moyer Program funds. See Section K for more regarding earned interest.

4. Projects funded with the AB 923 $2 MV Fee that are not Carl Moyer Program match projects shall be reported as follows:

   (A) Air districts claiming State Implementation Plan credit for AB 923 $2 MV Fee projects must report project-by-project details by entering them into CARL.

(B) Air districts not claiming SIP credit for AB 923 $2 MV Fee projects must report fund expenditures for each of the six allowed uses identified in Section H.1., but are not required to report project-by-project details. However, ARB recommends that air districts make project information publicly available in the interest of transparency.

5. Air districts that have not demonstrated sufficient progress toward contract execution and expenditure targets in the Yearly Report must work with their ARB Carl Moyer Program liaison to ensure the air district is on target to liquidate all required program funds within the four-year deadline (see Section Q). At a minimum, such air districts must provide an email, an explanation with the Yearly Report, or other written documentation briefly describing:

   (A) The reason for the delay in executing contracts or expending funds, and

   (B) Their schedule for executing the contracts, expending funds, returning funds to ARB, contributing the funds to the Rural District Assistance Program, or other action(s) as needed to ensure project funds are liquidated within the four-year deadline. Air districts choosing to contribute funds to the Rural District Assistance Program must do so by the March 1 date preceding the applicable funding year liquidation deadline (e.g., by
   March 1, 2018, for Year 16 funds, which have a June 30, 2018 liquidation deadline)

6. If the Yearly Report identifies a liquidation shortfall, the air district must submit and ARB must receive a check for the shortfall amount by September 28 (i.e. 90 days after the June 30 liquidation deadline). No additional disbursements will be made to the air district until the returned funds have been received by ARB.

7. Receipt of a Yearly Report by ARB does not imply ARB approval of project eligibility. Air district staff is responsible for project approval and funding eligibility determinations.

8. Air districts that are found to have funded ineligible projects will be required to substitute eligible projects equal to the amount found ineligible or return the ineligible amount to ARB as mitigation or returned funds.

S. Return and Reallocation of Unliquidated Funds

1. An air district that does not complete liquidation of program year funds by June 30 of the fourth year following grant agreement execution must return the unliquidated funds by September 28 (i.e. 90 days after the June 30 liquidation date) (Health & Safety Code § 44287(j)). Funds under executed contract, are not subject to return to ARB (Health and Safety Code § 44291(d)).

2. For returned funds (including funds that have been disbursed to districts that are subsequently returned to ARB prior to the expenditure deadline required under

Health and Safety Code section 44287(k)) ARB shall reallocate those funds to air districts per Health and Safety Code section 44299.2(c). Air districts may apply for any amount of the available funds. To be considered for funding, an air district must apply for the funds and submit a list of eligible projects. The application must demonstrate the air district's ability to expend the amount requested on eligible Carl Moyer Program projects expeditiously.

3. If the total returned funds are less than $300,000, ARB shall determine how to reallocate the funds to air districts and/or projects identified in Section S.2.

4. If the total returned funds are $300,000 or greater, ARB shall take the following steps to reallocate the funds:

   (A) Using the air districts identified in Section S.2., use the allocation methodology per Health and Safety Code section 44299.2(a).

   (B) Adjust the results from Section S.4.(A) using the project lists submitted in Section S.2. to best match the available funds while also attempting to provide up to 20 percent of funds to rural air districts.

5. No administrative funds are provided with reallocated funds.

6. No matching funds are required for reallocated funds.

7. For the timeline for reallocation and expenditure of returned funds, see Section B.2. of this chapter – Table 3-2.

T. Program Non-Performance

1. Program non-performance is air district non-compliance with program Guidelines or statute that is not corrected by the air district in a timely or satisfactory fashion. As directed by Health and Safety Code section 44291(d), ARB shall monitor air district programs to ensure that participating air districts conduct their programs consistent with the criteria and guidelines established by the Board. ARB may become aware of possible air district non-performance through program reports, Program Reviews of air districts, or other means. Examples of program
   non-compliance with program Guidelines or statute include:

   (A) Failure to return unliquidated funds within 90 days of the liquidation deadline (Health and Safety Code § 44287(j))

   (B) Misuse of Carl Moyer Program funds, including funding of ineligible projects.

   (C) Insufficient or improper program oversight and enforcement, including widespread deficiencies in project contracting, inspections, reviews or audits.

(D) Insufficient, incomplete, or inaccurate project documentation.

(E) Failure to submit timely and accurate reports to ARB.

2. ARB shall make every effort to assist any non-performing air district.

3. When ARB determines that an air district program is non-compliant, ARB shall initiate a series of informal steps to assist the air district as follows:

   (A) The ARB air district liaison and manager shall work with the air district staff to understand and resolve the issue.

   (B) If the ARB Branch Chief determines that the non-performance issue has not been resolved, the ARB Branch Chief shall contact the air district APCO and continue the informal process to understand the issue and offer help to resolve the issue.

   (C) If the ARB Branch Chief determines that the non-performance issue has not been resolved through Section T.3.(B), the ARB air district liaison shall send a Program Non-Performance Notification email to the air district's program contact that contains the following:

      (1) Description of the problem;

      (2) Pertinent details, such as names of involved persons and projects, dates, dollar amounts, and citations of relevant guidelines sections, Health and Safety Code, and regulations;

      (3) Possible solutions to the problem, if some have been identified, and/or offer ARB assistance; and

      (4) Arrangements for a meeting between the ARB Branch Chief and the air district APCO to agree on a plan and timeline for resolving the problem. The plan and timeline shall be recorded by the ARB air district liaison and emailed to the air district APCO within five business days of the meeting.

4. Lacking satisfactory resolution of the issue(s) described above then in accordance with Health and Safety Code section 44291(d) the ARB Executive Officer shall determine if the non-performance issue(s) identified in Section T.3.(C)(1) warrants ARB's recapture of funds that have been granted to the air district and not yet awarded to approved projects. If so, ARB will send a letter of Program Non-Performance to the air district APCO. The letter will set a public meeting to be held at the air district's offices (or other appropriate facility within the air district). The purpose of the meeting will be to consider public comments prior to any recapture of funds.

U. ARB Program Oversight

1. State law assigns ARB the responsibility and authority to oversee Carl Moyer Programs and related emission reduction incentive programs as identified in Health and Safety Code section 44291 and Health and Safety Code section 39500. ARB conducts Program Reviews to ensure that air district programs achieve expected emission reductions and are implemented in a manner consistent with program guidelines and State law. ARB may also contract with the State Department of Finance to conduct fiscal compliance audits of air district records within the scope of the Program Review. ARB retains final authority with respect to corrective measures and follow-up. Besides identifying program deficiencies, Incentives Program Reviews also provide a mechanism for identifying the strengths of air district programs. ARB's specific oversight procedures are described in more detail in the Carl Moyer and School Bus Programs Auditing Policies and Procedures posted on the Carl Moyer Program website: http://www.arb.ca.gov/msprog/moyer/audits/audits.htm.

2. ARB shall review a sufficient number of air districts each year to ensure proper program implementation.

3. To ensure objectivity and the efficient use of resources, ARB shall use a risk-based approach to select specific air districts for Program Review during a given year and to select specific air district projects to review. Consistent with this approach, air districts that demonstrate good performance when reviewed will likely be reviewed less frequently in the future than similarly-funded air districts with poorer Program Review results.

4. ARB's responsibilities during an Incentives Program Review include the following:

   (A) Program Reviews shall be conducted in a manner that reflects the public responsibility and accountability entrusted to ARB.

   (B) ARB shall generally limit the scope of a Program Review to cover the two most recently-completed funding years and the two years currently in progress. For example, a Program Review initiated April 2010 would typically cover Year 8 (completed June 30, 2008), Year 9 (completed June 30, 2009), and Years 10 and 11 (in progress).

   (C) Once a given funding year is reviewed, ARB will typically not review it again unless warranted. ARB reserves the right to investigate possible fraud or misuse of funds in any program year.

   (D) ARB shall maintain open channels of communication with the air district under review. ARB's Incentives Program Review procedures contain a number of provisions to enable open communications. Such provisions

include fully explaining the review's scope and procedure at the beginning of the process, discussing preferred channels of communication with the air district, informing the air district of potential issues as they unfold, affording numerous opportunities for air district input throughout the review, thoroughly discussing any findings and recommendations with the air district during the exit interview, and allowing the air district an opportunity to formally respond to the Incentives Program Review report.

(E) To ensure objectivity and predictability, ARB shall base its findings and recommendations on materials such as State law, ARB's Program Guidelines and Mail-Outs, Program Grant Award and Authorizations, email communications between ARB and the air district, an air district's Policies and Procedures Manual, and an air district's local requirements.

(F) All Incentives Program Review reports, air district responses, and related documents shall be made available to the public via web posting at ARB's Carl Moyer Program website.

(G) ARB shall conduct sufficient follow-up activities, including assisting air districts and conducting follow-up reviews, to ensure that any identified deficiencies are promptly and effectively mitigated.

5. Air district responsibilities during an Incentives Program Review include the following:

(A) Air districts must ensure that program files and other requested information are readily available to Incentives Program Review staff. Unless otherwise specified for a specific source category, project files must be retained for a minimum of three years after the end of the contract term. In the event final payment has not been issued prior to the end of the contract term, the three-year clock is re-started upon final payment. Applications that were not selected for funding must be retained for a minimum of three years after receipt. Administrative records for a given funding year (including personnel documentation and records of various administrative expenses per Section L) must be retained, at a minimum, until the applicable funding year liquidation deadline (e.g., for Year 13 (fiscal year 2010-2011) funds, the funding year liquidation deadline is June 30, 2015).

(B) Air district management must, at a minimum, participate in the entrance and exit interviews and ensure that air district staff is cooperative with Incentives Program Review staff.

(C) Air district staff must communicate fully with Incentives Program Review staff and with air district management throughout the course of a review.

(D) If deficiencies are identified during the review, air districts must make every effort, including requesting assistance from ARB if necessary, to ensure that

the identified deficiencies are fully mitigated. Air districts must report on their progress at specified intervals.

6. AB 923 $2 MV Fee projects are subject to Program Review or evaluation as follows:

   (A) A Carl Moyer Program match project funded with the AB 923 $2 MV Fee will be subject to the same review and oversight requirements and protocols as other Carl Moyer Program match projects.

   (B) A non-match project funded with the AB 923 $2 MV Fee may be evaluated by ARB in conjunction with a Program Review. Evaluation of these projects shall be limited to project eligibility. Any irregularities regarding non-match AB 923 $2 MV Fee project eligibility must be reported separately from Carl Moyer Program Incentives Program Review findings.

V. Minimum Project Application Requirements

1. Air districts and ARB shall conduct outreach to inform potential project applicants of the availability of grants and the requirements and objectives of the
   Carl Moyer Program (Health & Safety Code § 44290).

2. Project applications must include all information needed to populate and calculate project cost-effectiveness in CARL.

3. Information regarding previous years of existing engine usage (e.g. miles traveled, hours operated, or fuel consumed per year) must be documented and included in the project application. This information must be used to evaluate project cost-effectiveness and the maximum grant award amount. At the air district's option, minimum annual usage is not required to be specified in the contract for projects in which at least twenty-four (24) months of complete historical usage prior to the application date have been documented and verified by the air district. If an applicant has been on active military duty at any time during the previous twenty four (24) months, documentation prior to deployment and covering the same length of time as the deployment period may be used to meet the title, registration, usage, and operation in California requirements as applicable for each source category. The applicant must submit a copy of DD Form 214, Certificate of Release or Discharge from Active Duty to verify military service during the deployment period.

4. Applications must include a signature section for third parties. A third party may complete an application or part of an application on an owner's behalf if the vehicle, engine, or equipment owner signs the application. The third party signature section must include signature and date lines, and blanks for the third party to indicate the amount and source of payment, if any.

5. Project applications must include language informing the applicant that by

signing and submitting the application, the applicant certifies under penalty of perjury that the information in the application is accurate and true. In addition, the application must include the following statements that the applicant or the applicant's designee must certify as accurate and true:

(A) A disclosure statement.

(1) The disclosure statement must specify whether the applicant has submitted an application for incentive funds to any other entity or program for the same equipment (for example, repowering of the same project engine). If so, the applicant must disclose to whom the other application was submitted, and whether funds have been awarded or may be awarded. If funds have been awarded or may be awarded, the funding amount must be disclosed.

(2) An applicant may re-apply for project funding if a previous application for the same project has been rejected by the air district and is no longer being considered for funding.

(3) An applicant must disclose the value of any current financial public incentive that directly reduces the project cost for the same engine except for tax credits, tax deductions, rebates, or loans. The incremental cost of the project will be reduced by the amount of the other funds, except for projects, in which the following funding sources are used:

a. Federal funding to reduce GHG emissions.

b. Alternative and Renewable Fuel and Vehicle Technology Program.

c. Air Quality Improvement Program.

d. ARB's Low Carbon Transportation Investment funds.

e. Tax credits or deductions.

f. Public rebates or loans.

g. Local air district penalty fees.

(4) An applicant who is found to have applied for or received incentive funds from another entity or program for the same project without disclosing that information as required by Section V.5.(A)(1), shall at a minimum, be disqualified from funding for that project from all sources within the control of an air district or ARB. ARB and the air district may also seek civil penalties for such non-disclosure.

(B) A regulatory compliance statement form requiring the applicant to certify that they are currently in compliance with all federal, state, and local air quality rules and regulations at time of application submittal.

W. Application Evaluation and Project Selection

1. Air districts must review all applications for completeness upon receipt and notify the applicants within 30 working days of receipt if their application is not complete, consistent with Health and Safety Code section 44288(a). The air district must make every effort to clearly state to the applicant what is required to make the application complete. The application and all correspondence with the applicant should be kept in the applicant's project file. Additionally, the record of each project's rating and ranking, receipt date, or other project selection criteria must be maintained with the project file.

2. Air districts are responsible for determining that project applications are credible, made in good faith, and in compliance with the Carl Moyer Program and its objectives.

3. Air districts must ensure that the emission reductions provided by selected projects are eligible and surplus to adopted regulations and other legal requirements. This should include checking to ensure the project meets all of the minimum requirements outlined in the appropriate source category chapter:

   (A) Documentation of historical vehicle, equipment, or engine usage;

   (B) Documentation of project costs;

   (C) Engine or retrofit device Executive Orders, if applicable;

   (D) Proof of a vehicle compliance check, as needed, for on-road (which includes emergency vehicle) projects; and

   (E) Other documentation identified in the relevant source category chapter.

4. Air districts must have a system for tracking applications. CARL may be used to satisfy this requirement if an air district enters the data from all applications received into this database, whether the application is provided funding or not. At a minimum, the tracking system shall include the minimum information needed to readily identify the project applicant, project type, and project eligibility, and to calculate project cost-effectiveness and maximum grant award in CARL. Air districts that import project information into CARL are responsible for ensuring the accuracy of their calculations of cost-effectiveness and eligible funding amounts. Minimum allocation air districts and any other implementing air districts receiving less than one-half percent of the current fiscal year total Carl Moyer Program Funds, or $450,000, whichever is less, are not required to maintain an application tracking system.

5. The following requirements apply to those air districts that do not operate and maintain their own databases:

   (A) Information for projects selected for funding must be entered into CARL to ensure each project meets the emission reduction requirements and cost-effectiveness criteria of the Carl Moyer Program.

   (B) No project will be funded unless CARL indicates the emission reduction requirements and cost-effectiveness criteria of the Carl Moyer Program have been met.

   (C) If CARL indicates the project does not meet either the emission reduction requirements or the cost-effectiveness criteria of the Carl Moyer Program and the air district representative believes the project should actually qualify, the air district representative may contact his or her ARB liaison to further evaluate project eligibility.

6. The air district must maintain a copy of each application and a file for each project selected for funding. An air district may use a solely electronic file system only if the air district satisfactorily demonstrates to ARB that all documentation is maintained and can be easily accessed on demand. Unless otherwise specified for a specific source category, project files must be retained three years after the end of the contract term. In the event final payment has not been issued prior to the end of the contract term, the three-year clock is re-started upon final payment.

7. Air districts must keep project applications until a minimum of three years after receipt for projects not selected for funding.

8. Projects approved for funding must meet all applicable requirements of these guidelines. Once an air district has checked the eligibility of projects, the air district must follow its Policies and Procedures Manual in selecting projects to fund.

9. Carl Moyer Program participants that received funding and are still under contract may not apply for funding for the same project through the Carl Moyer Program, the Voucher Incentive Program, the Goods Movement Emission Reduction Program, or any other program.

   (A) If an air district chooses to amend a contract to reduce the term, the amended project must be cost-effective during the reduced contract term, based on the cost-effectiveness values and limit that applied when the original contract was executed. If an air district agrees to accept a prorated repayment of the Carl Moyer Program grant, the repayment and amended contract execution must both occur prior to the execution of any new contract for funding.

(B) Emissions reductions that were previously funded are part of the baseline and must not be included as emissions benefits of any subsequent project designed to achieve emission reductions, including the Carl Moyer Program, the Voucher Incentive Program, or the Goods Movement Emission Reduction Program.

10. An air district's methodology for notifying applicants of their prospective award must be included in its Policies and Procedures Manual.

11. Air districts with a population greater than one million inhabitants must select from their applicant pool in a way that ensures that 50 percent or more of their Carl Moyer Program funds (including the smog abatement fee and tire fee) are expended on projects that are located in/or operate in environmental justice/ high risk communities (Health & Safety Code § 43023.5). Air districts may track this on a cumulative basis (see Section Q.1.).

12. ARB shall include a solicitation packet on its website for State Reserve projects, funded by a reserve fund of up to ten percent of program funds, solicited and selected by ARB consistent with Health and Safety Code section 44286(d). The State Reserve project solicitation packet shall include the application requirements and application due date, project eligibility criteria, and project selection criteria.

X. Case-by-Case Determination Process

1. An air district may request ARB review of a project or other Carl Moyer Program element that varies from the requirements of these Guidelines for a case-by-case determination. ARB Carl Moyer Program staff may approve such a project or other program element if the outcome of this approval would not adversely impact achievement of real, surplus, quantifiable, enforceable, and cost-effective emission reductions, would not significantly reduce program transparency, and is not prohibited by law.

2. An air district requesting a case-by-case determination for a project must submit the following to Carl Moyer Program staff (e.g., liaison and/or source category expert):

   (A) A summary of the request and reference(s) to the pertinent area(s) of the Guidelines which the air district is asking for additional guidance and approval.

   (B) Documents providing information essential to the request for approval including, but not limited to, baseline and new engine information, the associated ARB engine Executive Orders and/or United States Environmental Protection Agency Certificate of Conformity for baseline and new engines, other related applicant information from a completed

application.

(C) Other information and documents as requested by Carl Moyer Program staff.

Once the above information has been submitted, ARB staff will respond to the air district within 15 business days with a determination or estimated date of determination.

3. The requested project or program element submitted for review shall be deemed:

   (A) Approved: Approval of a project does not imply or equate to "blanket approval" of other similar projects.

   (B) Not Approved: Non-approval of a project does not imply or equate to "blanket non-approval" of other similar projects.

   (C) No Action / CBC approval not required: ARB evaluation concludes that a case-by-case determination is not required as the request already conforms to the requirements or intent of the Guidelines.

4. Air districts are required to request a case-by-case determination even if they believe a project is similar to previously-approved case-by-case projects. ARB may initiate a guideline modification under the Executive Officer's authority to establish general approval. Subsequent requests for ARB approval would not be required for a project or program element covered by a general case determination.

5. All case-by-case determinations submitted for review and all general case determinations will be made available to the public via web posting at ARB's Carl Moyer Program website.

6. Air districts must keep a copy of the determination, either approved or not approved, in the project file. Written case-by-case approval for other program elements must be kept by an air district with the air district Policies and Procedures manual and be readily available for ARB Program Review staff.

7. All attempts should be made to request a case-by-case determination prior to contract execution. However, in rare circumstances in which an unforeseen event, subsequent to contract execution, leads to a project or program element that varies from the requirements of these Guidelines, a request for case-by-case determination as outlined in Section X.2. will also be required.

Y. Minimum Contract Requirements

1. General Requirements. Air districts participating in the Carl Moyer Program must execute contracts with prospective grantees who will receive funds under the

Carl Moyer Program. All Carl Moyer Program project contracts must include the elements described in this section. Projects funded by the Carl Moyer Program may not be used to generate a compliance extension or credit for determining regulatory compliance. All executed project contracts and contract amendments must be kept in the air district's project file.

2. Party Names and Date. All contracts must state the name of the air district and the grantee as parties to the contract. Contracts must include signature blocks with an area for the dates the contract is signed, or the execution date must otherwise be clearly indicated in the contract.

3. Notices. All contracts must include contact information for both parties to the contract, including how to send and receive notices.

4. Funds from Other Sources.

   (A) Grantees must certify that they have disclosed all other public funds that they have applied for or received for a project.

   (B) A grantee may receive Carl Moyer Program funding from multiple air districts for the same project if these entities are coordinating to jointly fund portions of the project. The contract must list the entities involved and funding provided.

   (C) Except for public agency applicants, the contract must prohibit the grantee from applying for or receiving other public funds except for tax credit, tax deductions, public rebates, public loans, or local air district penalty funds for the same project except in the following situation. Grantees may apply for and receive additional funding for the same project from:

      (1) Federal programs to reduce GHG emissions,
      (2) Funding provided by the Alternative and Renewable Fuel and Vehicle Technology Program,
      (3) The Air Quality Improvement Program, or
      (4) ARB's Low Carbon Transportation Investment funds to reduce GHG emissions.

      These funds are not required to be included in the cost-effectiveness calculations (See Appendix C), but they are subject to the disclosure requirements. The total public funds except for tax credit, tax deductions, public rebates, public loans, or local air district penalty funds received by the grantee during the term of the Carl Moyer Program contract cannot exceed 85 percent of the project cost (see Chapter 2: General Criteria).

   (D) A contract for a public agency applicant must prohibit the grantee from receiving grants and public funding sources that when combined, exceeds

the total project cost.

5. Contract Term. All contracts must specify the term of the contract. The contract term shall include two time frames – "project completion" and "project implementation" – to ensure that the air district and ARB can fully enforce the contract during the life of the Carl Moyer Program-funded project.

   (A) Project Completion. Project completion is the time frame starting with the date of execution of the contract to the date the project post-inspection confirms that the project has become operational. This includes the time period when an engine or vehicle is ordered, delivered and installed. The contract must include a specified time frame in which project completion will occur so that the contract is liquidated within four years from the original date of contract execution. Under no circumstance may the liquidation date be extended beyond four years from the original date of contract execution.

   (B) Project Implementation. The project implementation time frame is the second part of the contract term, and must equal the project life used in the project cost-effectiveness calculation. The contract must specify that the grantee is required to operate and maintain their Carl Moyer Program-funded project according to the terms of the contract for the full project implementation period.

6. Project Specifications. All contracts must include detailed information on the baseline and new vehicles, equipment, and/or engines that were used in the project cost-effectiveness calculation. This requirement may be met by including the project application as an attachment to the contract as long as the application is accurate and complete.

   (A) A program-eligible replacement vehicle, piece of equipment and/or engine that is verified or certified to achieve equivalent or greater reductions than the original project replacement vehicle, piece of equipment and/or engine may be substituted with prior approval of the air district.

   (B) All contracts must specify the amount the engine is to operate within California (or the air district) each year based on hours, miles, or fuel usage.

      (1) For projects for which at least twenty-four (24) months of complete historical usage are documented and verified by the air district, minimum annual usage is not required to be specified in the contract. Such historical usage must be documented for at least the twenty-four
      (24) consecutive months immediately prior to the application date.

      (2) The types of acceptable documentation for establishing historical annual usage will be clearly defined in each air district's policies and procedures manual and will be subject to ARB approval at ARB's request.

(3) Additional forms of documentation to verify historical annual usage that are not included in an air district's policies and procedures manual can be evaluated and approved by ARB on a case-by-case basis.

(C) Contracts must also contain a statement that the project complies with the Carl Moyer Program Guidelines and that the grantee will meet the following requirements:

(1) Certify that the grantee's fleet, engine(s), or equipment/vehicle is in compliance with all applicable federal, state, and local air quality rules and regulations at time of contract execution.

(2) Maintain compliance with all applicable federal, state, and local air quality rules and regulations for the full contract term.

(3) For repower projects, the installation of the engine must be completed in a manner such that it does not void the engine warranty provided by the manufacturer and any remaining warranty provided by the equipment/vehicle manufacturer.

(CI) Contracts must specify the following :

(1) Projects funded by the Carl Moyer Program must be included when defining the size of the fleet for determining regulatory requirements.

(2) Throughout the contract term, projects funded by the Carl Moyer Program must not be used to generate credits or compliance extensions, and must be excluded when determining regulatory compliance.

7. Maintenance. All contracts must require the grantee to maintain the vehicle, equipment and/or engine according to the manufacturer's specifications for the life of the project, and include a prohibition on engine tampering. The grantee must maintain a working hour meter for projects that use hours of operation as a means of calculating emission reductions and cost-effectiveness. If the hour meter fails, the grantee must immediately notify the air district, and remain responsible for validating any hours not recorded by the hour meter. The grantee must either repair or replace the non-operating meter or provide other documentation of equipment operating hours acceptable to the air district.

8. Payment. Before a Carl Moyer Program payment may be made to a project participant, the project contract must be executed, an eligible invoice must be received by the air district, and the project post-inspection must be successfully completed to document the completion of the work specified in the invoice. The equipment must be operational before the final payment is issued. All contracts must include the following payment terms:

(A) Maximum Contract Amount. The maximum contract amount must not exceed the maximum funding level corresponding to the current program cost-effectiveness limit, nor may the maximum contract amount exceed the project incremental cost. The maximum contract amount must also comply with any funding caps and other criteria for the specific project category as identified in these Guidelines.

(B) Itemized Invoices. Payment terms must require itemized invoices from the engine supplier for repowers or paid invoices from the vehicle owner for new vehicles and satisfactory post-inspection by the air district prior to payment of the owner's invoice. An invoice payment for a specific vehicle, engine, or piece of equipment may not exceed the amount indicated on the project contract for that vehicle, engine, or piece of equipment. The contract should be clear that the air district will pay the lower of the contract amount or the final invoice amount. Invoices must meet the minimum requirements of Section BB to be eligible for Carl Moyer Program funding.

9. Reporting. All contracts must include a provision for grantees to submit annual reports commencing no later than 18 months after project post-inspection and continuing annually thereafter throughout the project implementation phase of the contract. The air district must include the dates the grantee Annual Report is due.

   (A) If the air district monitoring phase (i.e. project implementation phase) of the contract term exceeds five years, the grantee's reporting responsibility may be reduced to once every other year after the initial five years of reporting.

   (B) If the project is a zero-emission technology, reporting may be reduced to biennially for the first six years of the contract term. No Annual Reports are required thereafter.

   (C) During the project implementation phase, the air district is responsible for monitoring the project to assure the project is operational and the project emissions reductions are realized.

   (D) The contract must inform the grantee that noncompliance with the reporting requirements will require on-site monitoring or inspection(s).

10. On-Site Inspections and Audits. All contracts must include language that allows the air district, ARB, or their designee to conduct a fiscal audit of the project and/or to inspect the project engine, vehicle, and/or equipment and associated records during the contract term. Contracts must require the owner to maintain and retain the project records for at least three years after contract expiration.

11. Repercussions for Nonperformance. Air districts must include repercussions for non-compliance with the obligations of the contract.

(A) The contract must specify that by executing the contract, the grantee understands and agrees to operate the vehicle, equipment, and/or engine according to the terms of the contract and to cooperate with the air district and ARB in implementation, monitoring, enforcement, and other efforts to assure the emission benefits are real, quantifiable, surplus, and enforceable.

(B) The contract must describe the repercussions to the grantee for noncompliance with contract requirements, including but not limited to cancelling the contract and recapturing project funds in proportion to any loss of emission reductions as agreed to in the contract (Health & Safety Code § 44291(c)).

(C) The contract must inform the grantee that ARB and the air district have the authority to seek any remedies available under the law for noncompliance with Carl Moyer Program requirements and nonperformance with the contract. Air districts may consider unforeseen circumstances beyond the grantee's control in determining repercussions for nonperformance.

(D) The contract must state that ARB, as an intended third party beneficiary, reserves the right to enforce the terms of the contract at any time during the contract term to ensure emission reductions are obtained.

Z. Project Pre-Inspection

1. Once an application is deemed eligible, the air district must complete a pre-inspection. Air districts may choose to allow public agencies (e.g. public works departments, transit organizations, and school districts) to provide documentation of the engine(s) and its use in lieu of a pre-inspection.

2. The pre-inspection form and information to be documented must include, at a minimum, the following:

   (A) Information regarding the baseline engine, vehicle, or equipment as needed to uniquely identify, establish eligibility, provide a basis for emission calculations, populate the CARL database, and ensure contract enforceability. Such information includes (as applicable) make, model, year, horsepower, fuel type, engine family, engine tier, serial number, vehicle identification number (VIN), and any additional information pertinent to the project. Engines without a visible and legible serial number must be uniquely identified by having the engine block stamped with a Carl Moyer Program number or alternative permanent marking such as an engine tag.

   (B) The project usage (hours or miles) meter reading if used in the project cost-effectiveness calculation. The inspector must verify that stated project usage is reasonable given the usage meter reading.

(C) Verification that the engine is operational (with a start-up) and that the engine is working as described in the application (document function and use).

(D) Photo documentation of the engine, vehicle, or equipment information. The photos must include the legible serial number of the engine (if available) and/or any other identifying markings. Air districts must include in their Policies and Procedures Manual a method for cataloging, referencing, storing and easily retrieving project-specific photos. These methods may include electronic filing for digital photos, the inclusion of project-specific information (applicant name, date, project number, etc.) within each photograph or inscribing each photo with pertinent project-specific information. ARB approval of the air district's Policies and Procedures Manual shall indicate approval of the photo documentation methodology.

(E) Other relevant information including, but not limited to:

(1) Name of inspector;

(2) Date of inspection;

(3) Name and contact information of engine or equipment owner; and

(4) Location of the engine or equipment.

3. Either at the time of application, or no later than the time of pre-inspection the district must obtain certification and submission of supporting documentation from the applicant that their engine(s), vehicle/equipment, or project fleet is currently in compliance with the applicable rules or regulations affecting the engine(s), vehicle/equipment for which they are requesting funding.

4. The air district must maintain a hard copy of the completed pre-inspection form in the air district's project file.

5. All projects other than on-road retrofit projects must be pre-inspected personally by air district staff. An air district may enter into a contract with a vehicle or equipment dealer to pre-inspect on-road retrofit projects. An air district that enters into such a contract must ensure the following:

(A) The vehicle or equipment dealer must complete and sign the appropriate inspection forms and provide photographic evidence that the equipment is correctly identified on the form. Photographic evidence must include the engine tag and emissions information.

(B) The air district must define in its Policies and Procedures Manual its protocol for ensuring the correct verified project retrofit will be properly

installed on the eligible project vehicle.

(C) The air district must define the consequences of fraud in the contract with the dealer.

(D) The air district must randomly inspect at least ten percent of vehicles/equipment that have been pre-inspected by the dealer pursuant to the agreement.

6. The project pre-inspection must be completed prior to a project contract execution and the information in the contract must be consistent with the information gathered during the pre-inspection. An air district may apply to ARB for approval to conduct pre-inspections after contract execution on a case-by-case basis. Case-by-case approval of such a procedure shall depend upon the following conditions being met:

   (A) The air district describes the program benefits it would achieve by conducting pre-inspections after contract signature.

   (B) The project contract includes language to indicate contract terms may be adjusted or the contract may be deemed void based upon information collected during the pre-inspection. The air district must also include a process for informing the prospective grantee of such.

   (C) The air district's Policies and Procedures Manual clearly specifies the process for conducting pre-inspections after contract execution and any additional procedures enacted to ensure the project achieves real, surplus, enforceable, and quantifiable emission reductions. Work on the project engine, vehicle, or equipment may not commence until after the pre-inspection.

7. Minimum allocation air districts and any other implementing air district receiving less than one-half of one percent of the current fiscal year total Carl Moyer Program Funds, or $450,000, whichever is less, may reduce their required project pre-inspections to a minimum of 25 percent of the total number of projects associated with the current fiscal year funds. Projects must be selected from each source category funded.

AA. Project Post-Inspection

1. An air district must gather and document post-inspection information on all projects funded under the Carl Moyer Program.

   (A) The air district must conduct a post-inspection after it receives an invoice for a project from the grantee or otherwise receives notice the project is complete. If the post-inspection occurs before the air district receives the project invoice, the invoice must be reviewed for consistency with the new

engine, vehicle, or equipment information from the post-inspection form.

(B) For public fleets such as transit organizations where more than 20 of the vehicles in the fleet are included in the project, the air district may choose to inspect a statistically significant random sample of the vehicles included in the project.

(C) The inspector must record, at a minimum, information regarding the new project engines, vehicles/equipment, and retrofit devices as needed to uniquely identify, establish eligibility, provide a basis for emission calculations, populate the CARL database, and ensure contract enforceability. Such information includes (as applicable), make, model, year, horsepower, fuel type, engine family, engine tier, serial number, VIN number, retrofit device certification level, and any additional information pertinent to the project. Submersible pump inspections may have the applicant take a picture of the motor name plate information including, make, model, and serial number prior to installation inside the irrigation well. The district will verify the make, model and horsepower rating information with the project invoice.

(D) The engine must be operational in the equipment or vehicle as stated in the contract. The inspector must visually witness all engine startups and operation of all mobile projects.

(E) The engine, vehicle/equipment, and retrofit information must be documented with photos. The photos must include the serial number of the engine or retrofit (if legible) and/or any other identifying markings. Photos of the scrapped or destroyed engine must be included. Air districts must include in their Policies and Procedures Manual a method for cataloging, referencing, storing and easily retrieving project-specific photos. These methods may include electronic filing for digital photos, the inclusion of project-specific information (applicant name, date, project number, etc.) within each photograph or inscribing each photo with pertinent
project-specific information. ARB approval of the air district's Policies and Procedures Manual shall indicate approval of the photo documentation methodology.

(F) The post-inspection form must also contain other relevant information including, but not limited to:

(1) Name of inspector;

(2) Date of inspection;

(3) Name and contact information of engine or equipment owner; and

(4) Location of the engine or equipment.

(G) The air district must maintain a hard copy of the completed post-inspection form in the air district's project file.

2. Post-inspection of a retrofit device requires the collection of additional information from the labels affixed on both the retrofit device and the engine. The air district may make payment once post-inspection confirms the retrofit device and the engine are properly labeled with the manufacturer name, family name, and serial number. Retrofit projects that do not have the proper retrofit labels containing the required information on both the device and the engine are non-compliant with ARB retrofit verification and labeling requirements. The post-inspection form must note any missing information and a dated record of the notification must be kept in the project file. Potential scenarios are summarized below, which air district staff must address prior to payment:

   (A) The retrofit device is properly labeled but the engine lacks a label: An engine label should be readily obtainable from the retrofit manufacturer by reference to the serial number. The air district may make payment once the grantee has been informed that the engine must also be labeled.

   (B) The retrofit device is labeled but the label does not have the required items: The air district must contact the manager of the In-Use Control Measures section or their Carl Moyer Program liaison to determine if an alternate label has been approved. The air district may make payment once it gets approval from ARB or a compliant label has been installed on the retrofit device.

   (C) The engine is properly labeled but the retrofit device lacks a label: The air district may make payment once a compliant label has been installed on the retrofit device.

   (D) No label is found on either the engine or the retrofit device: The air district may make payment once a compliant label has been installed on both the engine and the retrofit device.

3. Post-inspection of a new electric motor on an agricultural pump must also include recording of the serial number of the variable frequency device if the project includes one.

4. The air district must verify that the existing (old) engine is destroyed and rendered permanently unusable and irreparable.

   (A) Air district staff must verify and document through photographic or video evidence that the destroyed engine serial number matches that on the project contract.

   (B) Air district staff must verify that engines without a visible and legible serial

number are uniquely identified by the correct air district stamp or other permanent marking prior to engine destruction, as per Section Z.2.(A).

(C) Methodology for verifying engine destruction must be identified in the air district's Policies and Procedures Manual. ARB approval of the Policies and Procedures Manual shall indicate ARB approval of the air district's methodology for verifying engine destruction.

(D) Destruction methods and requirements specific to the on-road fleet modernization category, off-road equipment replacement, and the light duty vehicle category are described in those chapters.

5. The air district must verify that the information collected in the post-inspection is consistent with the project contract.

BB. Project Invoice and Payment

1. With the exception of some progress payments as described in Section BB.6. and consistent with Section O of this chapter, an itemized invoice for a project (or a completed portion of a project if a partial payment is being made) must be received by the air district and a post-inspection of the project must indicate the project is in-place and operational before the air district may make a payment. See Chapters 10 (Portable and Stationary Agricultural Sources) and 12 (Marine Vessels) for specific exemptions for electric agricultural irrigation pump motors and shore-side shore power projects, respectively. A project invoice must include enough detail to ensure only eligible project costs are being reimbursed, yet clear and concise enough to be understandable. The air district must review the itemized invoice and only pay for eligible expenses.

2. Equipment and parts on engine repower projects are eligible for funding only if they are required to ensure the effective installation and functioning of the new engine, but are not part of typical vehicle or equipment maintenance or repair. Ineligible repower costs include tires, axles, paint, brakes, and mufflers. Ineligible marine vessel repower costs are described in the marine vessel chapter of these Guidelines.

3. In order to be eligible for Carl Moyer Program funding, labor expenses must be included in the project invoice, which must detail the number of hours charged and the hourly wage.

4. Taxes, installation costs for eligible hardware, and transport costs for eligible hardware are eligible for Carl Moyer Program funding at the air district's discretion.

5. A potential grantee may not order or make a down payment on a new engine, piece of equipment, or vehicle prior to air district approval of the project, either via contract execution or approval by the governing board or board designee.

Dealers ordering engines, equipment, or vehicles prior to air district approval of grant applications assume all financial risk and are in no way ensured program funds. A grantee may not receive engines, equipment, or vehicles, nor may work begin on a repower or retrofit project, until the project contract is fully executed, unless the air district has provided the potential grantee with a written notification that any work performed is not guaranteed funding until a contract is executed.

6. Partial payments, including progress payments, may be made only if the payment process and requirements have been reviewed and approved by the air district, are described in the air district's Policies and Procedures Manual, and are described in the contract. If multiple engines, vehicles or pieces of equipment comprise a project under one contract, all the funds under the project's contract may be counted as expended consistent with Section O.3. of this chapter as long as the air district has paid the approved grant amount of one or more units that are invoiced and ascertained by post-inspection to be in place and operational.

7. Progress payments (for example, providing partial payment for an engine prior to its installation and operation) will only be made after the grantee provides the air district with sufficient evidence of completing predetermined milestones such as engine delivery. The air district must maintain a clear record of progress payments in the file and in the administration or fiscal unit of the air district. Funds under a contract for which progress payments are being made may not be counted as expended until such time that the air district pays the incremental cost of an invoiced engine, vehicle, or piece of equipment that has been ascertained by post-inspection to be in place and operational consistent with Sections O.3. and P.2.(B) of this chapter. Progress payments include final payments that are withheld until all reporting requirements are met (also known as "withhold payments").

8. Payments typically will be made directly to the grantee. However, payments may be made directly to the dealer or distributor only if such payment arrangements are specified in the contract.

9. Additional project invoicing requirements may also be included in the source category chapters.

10. For all on-road and emergency vehicle projects, should a compliance check indicate that there is an outstanding violation with any vehicle in the applicant's fleet, no disbursement may be made until the applicant provides proof to the district that each violation has been corrected and each fine has been paid.

11. Where a contract requires a grantee to demonstrate that specific regulatory compliance requirements have been met, in order to receive funding (such as engines subject to the Portable Equipment ATCM), air districts may not pay invoices until the grantee has provided documentation that the requirements have been met. A project participant may demonstrate this via a detailed letter

signed by the vehicle or equipment owner or legal representative or, if the regulation requires ARB (or the air district) to certify compliance, through ARB (or air district) certification. For more information, see the associated category chapter. Air districts are not to be held liable if a grantee falsifies this documentation.

12. Invoices received after the project post-inspection has been complete must be evaluated for consistency with the information gathered during the project post-inspection (See Section AA.1.).

13. The air district must maintain copies of all invoices and documentation of payment in the project file or otherwise keep copies on-site at the air district office and be readily available.

CC. Grantee Annual Reporting

1. Air districts must require all grantees to submit annual reports commencing no later than 18 months after the project post-inspection and annually thereafter for the term of the contract, with the following exceptions:

   (A) If the air district's monitoring phase of the contract term exceeds five years, the grantee's reporting responsibility may be reduced to once every other year after an initial five years of satisfactory reporting.

   (B) If the project involves a zero-emission technology, grantee reporting may be reduced to biennially for the first six years. No annual reports are required thereafter.

2. The annual report must be in a format prescribed by the air district and must contain all of the following information:

   (A) Grantee's name, address, and telephone number.

   (B) Information needed to uniquely identify the project engine, vehicle, or equipment, such as engine make, model, horsepower, and serial number.

   (C) Estimated percentage of time the vehicle or equipment has been operated in California since the previous annual report.

   (D) Readings of the usage meter (hour meter, odometer, electronic monitoring unit (EMU), etc.).

   (E) Except for projects in which usage is not required to be specified in the contract (as allowed per Section Y.6.(B)(1) above), if usage is more than 30 percent below that identified in the project application, the grantee must describe any conditions (such as weather, permits, major maintenance, etc.) that significantly impacted project usage. In instances where annual usage

is significantly lower than the contracted level due to unforeseen circumstances beyond the control of the grantee, the grantee may request a waiver from the air district per Section EE.4.(D).

3. The air district must review the annual report for completeness, accuracy, and usage. A hard copy of the annual report, initialed and dated by the reviewing staff, must be maintained in the project file. An air district choosing an alternative method to indicate its review and approval of annual reports must identify such alternative method in its Policies and Procedures Manual.

4. If an annual report is incomplete, inaccurate or not received from the grantee on schedule, the air district will make a reasonable attempt to obtain a complete and accurate report from the grantee. If the air district is unable to obtain the report, the air district must review all of the engines in that project, as per Section DD.

5. Air districts must keep a list of the grantee(s) from whom any reports are more than six months late. Grantees with reports that are more than six months late will not be granted any additional Carl Moyer Program funds until all reports are satisfactorily submitted.

M. Air District Audit of Projects

1. Each calendar year, air districts must conduct audits of projects funded with Carl Moyer Program Funds (see definitions, including project funds, earned interest, and match funds). The audits must, on an annual basis, include at least five percent or 20 active projects (whichever is less): the district may include in this total the audits of the projects whose owners fail to submit their most recently required project annual report. The requirements of Section BB of this chapter to audit all such projects also apply, even if the total projects audited exceed five percent of, or 20, active projects.

2. Audits must be completed by air district staff and, at a minimum, include an inspection that verifies that the engines and emission control devices paid for are still owned by the grantee named in the contract, operational in the same equipment, and meet the mileage, fuel usage, or hours of operation indicated in the executed contract. This must be performed by checking the serial number of the engine; witnessing the operation of the engine; and checking the odometer, hour meter/usage device, fuel receipts, or EMU.

3. Audits of multi-equipment/engine projects of up to 25 pieces must include inspection of at least two pieces, and for projects of 25 pieces or more must include inspection of at least five pieces.

EE. Nonperforming Projects

1. An air district must work with nonperforming project grantees to ensure Carl Moyer Program project requirements are met and emission reductions are

achieved.

2. Off-road construction contracts for which the usage requirements are not being met may be extended to capture the required usage, even if the contract extension overlaps the required compliance date. This revision only applies to off-road construction contracts that have been executed prior to August 15, 2008, and does not modify similar Moyer policy for other eligible categories.

3. An air district must make all reasonable efforts to recoup Carl Moyer Program funds from nonperforming grantees as needed to ensure funded emission reductions are achieved. An air district's efforts to recoup funds may be guided by circumstances such as:

   (A) The existence of fraud or intentional misuse of funds; or

   (B) The amount of Carl Moyer Program funding involved; or

   (C) The ability of the grantee to repay the funds.

4. The air district must take appropriate action to ensure contracted emission reductions are realized per engine, equipment, or vehicle. Except for projects in which usage is not required to be specified in the contract (as allowed per Section Y.6.(B)(1) above), should the average usage over a three year period a contracted engine, equipment, or vehicle be less than 70 percent of the activity required in the contract, the air district may choose, but is not limited to, the options below to address the underutilization. In cases of projects which may have a contracted project life of less than three years, the same activity threshold of less than 70 percent applies, averaged over the project life.

   (A) Extend the project contract for additional years (precluding overlap with an applicable rule implementation requirement).

   (B) Return funds in proportion to the loss in emission reductions.

   (C) Transfer ownership of the engine, vehicle, or equipment to another entity committed to complying with the contract terms.

   (D) Grant a waiver, without penalty, to the grantee for a defined time period. The grantee must demonstrate to the air district Air Pollution Control Officer's satisfaction that the engine, vehicle, or equipment is not being underutilized in favor of operating other, higher-polluting equipment and the underutilization was due to unforeseen conditions beyond the grantee's control.

      (1) The conditions under which a waiver may be issued include, but are not limited to, the following:

a. A decrease in usage due to the economic recession;

b. Unforeseen fluctuations in water allocations or pumping needs for agricultural irrigation pump engines; or

c. Significant land fallowing for off-road agricultural equipment and agricultural irrigation pump engines.

(2) To be considered for a waiver, the grantee must provide a written request to the air district along with documentation that substantiates the need for the waiver and verifies that higher-polluting equipment is not consequently receiving more use. The types of acceptable documentation must be clearly defined and incorporated into each air district's policies and procedures manual, and will be subject to ARB approval at ARB's request. Such documentation may include, but is not limited to, documentation from appropriate governmental agencies regarding surface water deliveries and fallow land, relevant logs regarding the amount of groundwater pumped in lieu of surface water deliveries, agricultural pump engine registration or permit information, records that show that idled vehicles or equipment are still owned by the grantee, relevant information from ARB's Diesel Off-Road On-Line Reporting System, or other pertinent records. Additional forms of documentation that are not included in an air district's policies and procedures manual can be evaluated and approved by ARB on a case-by-case basis.

a. The air district must specify the length of time for which the waiver is valid. The waiver will not exempt the grantee from any contract requirement to provide annual usage reports.

b. The waiver must be documented in writing, signed by the Air Pollution Control Officer or designee, and be included in the project file. Appropriate notations to indicate that a waiver has been granted must also be included in the "comments" field of the CARL database for each relevant project, if applicable.

(E) Recalculate a project's cost-effectiveness based on the reported decrease in usage. Based on this recalculation, if the project is still below the cost-effectiveness cap, consistent with the cap and methodology in effect on the date of contract execution and prior to the end of the contract, the air district must continue to monitor the project over the next year to determine if additional actions are necessary. A waiver is not required in this event.

5. Program funds recaptured from a project grantee as a result of a settlement agreement executed by ARB shall be returned to the air district that granted the funds. Any penalties resulting from a settlement agreement executed by ARB or the Attorney General shall be deposited in the Air Pollution Control Fund (Health

and Safety Code section 44291(e)).

6. An air district must describe its procedures for dealing with nonperforming grantees in its Policies and Procedures Manual.

Chapter 4: ON-ROAD HEAVY-DUTY VEHICLES

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) on-road heavy-duty vehicle projects, excluding Fleet Modernization and On-Road Voucher Incentive Program (On-Road VIP) projects (see Chapter 5 and the On-Road VIP Guidelines for more information about these programs). Local air quality management or air pollution control districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

The Air Resources Board (ARB) has adopted many fleet rules that affect on-road heavy-duty diesel-fueled vehicles (see Section E of this chapter). There are limited funding opportunities for vehicles subject to these rules and regulations.

Table 4-1
Summary of On-Road Heavy-Duty Funding Opportunities

Vehicle Type	Subject to ARB Fleet Rule	Moyer Funding Opportunities[1]
Urban Buses Transit Fleet Vehicles	Fleet Rule for Transit Agencies[2]	Very limited opportunity
Solid Waste Collection Vehicles, excluding transfer trucks	Solid Waste Collection Vehicle Regulation[3]	Very limited opportunities for oxides of nitrogen (NOx)
Transport Refrigeration Units (TRU)	TRU Air Toxic Control Measure (ATCM)[4]	Very limited opportunity
Auxiliary Power Units (APU)	Idling ATCM[5]	Very limited opportunity; zero emission projects only
Municipal Vehicles and Utility Vehicles	Fleet Rule for Public Agencies and Utilities[6]	Low-population counties - some opportunity through 2017 High-population counties – very limited opportunity
Drayage Trucks	Drayage Truck Regulation[7]	Very limited opportunity
Most other On-Road Heavy-Duty Vehicles	Statewide Truck & Bus Regulation[8]	Limited opportunity for fleets with ten vehicles or less

[1] Limited opportunities means a fleet's compliance status with the ARB regulation must be determined. Contact air district Carl Moyer Program staff or consult fleet rule Carl Moyer Implementation Charts at: https://ww3.arb.ca.gov/msprog/moyer/guidelines/2017gl/supplemental/final_combined_green_charts_20180208.pdf in addition to these guidelines. [2] Fleet Rule for Transit Agencies: http://www.arb.ca.gov/msprog/bus/bus.htm
[3] Solid Waste Collection Vehicle Regulation: http://www.arb.ca.gov/msprog/SWCV/SWCV.htm
[4] TRU Air Toxic Control Measure (ATCM): http://www.arb.ca.gov/regact/trude03/fro1.doc
[5] Idling ATCM: http://www.arb.ca.gov/regact/hdvidle/frorev.pdf
[6] Fleet Rule for Public Agencies and Utilities: http://www.arb.ca.gov/msprog/publicfleets/publicfleets.htm [7] Drayage Truck Regulation: http://www.arb.ca.gov/msprog/onroad/porttruck/porttruck.htm
[8] Statewide Truck & Bus Regulation: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm

Project Types: Taking the above table into consideration, the following categories may be eligible for funding:

1. Truck Replacement Projects (Fleet Modernization and On-Road VIP): The replacement of an older, dirtier truck with a newer, cleaner one. Most funding opportunities for on-road heavy-duty trucks are available for trucks in fleets of ten or fewer trucks through Fleet Modernization or On-Road VIP. The existing engine must be model year 2006 or older. Please see Chapter 5 for Fleet Modernization guidelines or the On-Road VIP Guidelines at www.arb.ca.gov/msprog/moyer/voucher/voucher.htm .

2. New Vehicle Purchase: The purchase of new vehicles with engines cleaner than those required by law. Funding opportunities in this source category will be limited due to the lack of availability of new vehicles with engines certified below the 0.20 grams per brake horsepower (g/bhp-hr) NOx emissions standard.

3. Repower Existing Vehicle: Repower with an engine cleaner than that currently in the vehicle. Due to technological constraints presented with newer engines fitting into older chassis, funding opportunities are limited.

4. Retrofit Purchase: The installation of a verified diesel emission control strategy. Diesel particulate filters are required for most on-road heavy-duty diesel vehicles in California, either as original equipment manufacturer (OEM) equipment in new trucks or through phased compliance schedules for older trucks complying with ARB rules and regulations. Funding is limited to retrofits that provide early or extra emission reductions to the regulations.

5. Transport Refrigeration Units (TRU): Due to the Air Toxic Control Measure (ATCM) that sets in-use performance standards for TRUs, projects available for funding are limited.

6. Idling Reduction: Idling reduction projects include electric auxiliary power units (APU), as well as truck stop electrification for both on-board and off-board infrastructure. Funding is limited to projects that provide emission reductions beyond what is required by regulation, such as zero emission technologies.

7. Electric Conversion: the replacement of a fossil-fueled engine and drivetrain with an all-electric motor and drivetrain.

Please see Section D (Project Criteria) for detailed minimum eligibility requirements.

B. Maximum Eligible Funding Amounts

Table 4-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G, except for

school bus projects which are subject to a unique cost-effectiveness limit as stated in Section E of this chapter.

Table 4-2
Maximum Funding Amounts for Carl Moyer On-Road Vehicle Projects

Project Type		Maximum
Non-School Bus Projects	New Vehicle Purchase	25 percent
	Repower	$30,000
	Retrofit: Highest Level particulate matter (PM)+ NOx	$20,000
	Retrofit: 2007 Engine Standard Equivalent*	$10,000
	TRU Retrofit	100 percent
	Idling Reduction Retrofit	100 percent
School Bus Projects	New Zero Emission School Bus Purchase or Electric Conversion	$400,000
	School Bus Repower	$70,000
	School Bus Retrofit	$20,000

* Including ARB verified selective catalytic reduction retrofits

C. Emission Standards

Table 4-3 lists the NOx and PM emission standards for new on-road heavy-duty engines. Urban buses have a separate set of emission standards which are now aligned with those for heavy-duty vehicles.

Table 4-3
Emission Standards for On-Road Heavy-Duty Diesel Engines (g/bhp-hr[1])

Model Year	NOx	PM
2007-2009	1.20[2]	0.01
2010 and later	0.20	0.01

[1] gram per brake horsepower-hour.

[2] Between 2007-2009, U.S. EPA requires 50 percent of heavy-duty diesel engine family certifications to meet the 0.20 g/bhp-hr NOx standard. Averaging is allowed, and it is expected that most engines will conform to the fleet NOx average of approximately 1.20 g-bhp/hr.

D. Project Criteria

The minimum qualifications for on-road heavy-duty vehicles are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General On-Road Heavy-Duty Vehicle Project Criteria

(A) Maximum project life for on-road projects:

(1)	Buses > 60,001 gross combined weight or gross vehicle weight (GVW) – New	12 years
(2)	School buses ≥ 33,001 GVW – New	20 years
(3)	School buses ≤ 33,000 GVW or Other On-road – New	10 years
(4)	Repower Only (No Retrofit)	7 years
(5)	School bus Electric Conversions	5 years
(6)	Repowers + Retrofits	5 years
(7)	Retrofits	5 years
(8)	Fleet Modernization	See Chapter 5

A longer project life may be approved on a case-by-case basis if applicants provide justifying documentation.

The maximum project life does not consider regulatory requirements that may reduce actual project life below these maximum values.

(B) On-road heavy-duty diesel vehicles with a gross vehicle weight rating (GVWR) between 8,501 and 14,000 pounds may be considered for Carl Moyer Program funding for new purchase, repower and retrofit projects on a case-by-case basis. Prior to submitting a case-by-case request, the district must review the retrofit Executive Order to confirm that the project vehicle meets all the terms and conditions.

(C) On-road heavy-duty (HD) vehicles (with GVWR over 14,000 pounds) must be powered by an engine certified to the applicable HD intended service class as shown on the engine certification Executive Order. However, the following cases may be allowed:

(1) Medium heavy-duty (MHD) engines may be installed in heavy heavy-duty (HHD) vehicles with GVWR up to 36,300 pounds (10 percent higher than 33,000 pounds GVWR) with written warranty verification by the engine and chassis manufacturer. A copy of the written warranty verification must be maintained in the air district project file.

(2) Heavy heavy-duty engines may be installed in medium heavy-duty vehicles if necessary for vocational purposes but only if the GVWR are within 10 percent of the HHD intended service class (i.e., GVWR of 29,701 pounds or greater).

(D) Declaration of Compliance: To receive funding, a fleet owner/operator must be compliant with all federal, state, and local air quality rules and regulations including the Periodic Smoke Inspection Program (PSIP). The application must include a statement of compliance in which the applicant must certify that they are in compliance at the time of application submittal. Districts

must also include the following language with a checkbox for the fleet owner/operator to indicate compliance:

> *I have read and understand that I am responsible for meeting the requirements of the PSIP. I am either currently in compliance with PSIP requirements or I have paid all penalties for non-compliance and continue to meet requirements since payment.*

(E) To receive funding for a retrofit, a fleet owner/operator must have the retrofitted vehicle that is eligible for a low NOx software upgrade (reflash) reflashed within 60 days of receipt of payment. The fleet owner/operator may self-certify to the air district that the reflash has been performed by submitting receipts of reflash completed or a picture of the "Low NOx Reflash Label" from the reflashed engine to the air district. Most HHD, and some MHD engines manufactured between 1993 through 1998 are eligible for reflash. A list of engines eligible for reflash is available at: http://www.arb.ca.gov/msprog/hdsoftware/hdsoftware.htm.

(F) At least 51 percent of total usage must occur in California. Only usage in California can be used for on-road calculations. If a fleet has recently reported in the Truck Regulations Upload and Compliance Reporting System (TRUCRS) to follow a limited usage compliance option (e.g., Low Mileage Work Truck Option, NOx Exempt Area Option, etc.), and the historical usage is outside of the limits of the option, the grant amount must be decreased to only include the usage limits of the option. Except as provided below, on-road calculations shall be based on projected annual mileage instead of fuel usage or engine hours, due to the fact that the mileage-based exhaust emission factors are more robust. Fuel-based calculations may be used only if documentation of previous fuel use and mileage records submitted to the air district with the application show the project to be at least 30 percent more cost-effective when using fuel-based calculations. If using the fuel-based calculations, usage must be based on two years of historical fuel usage documentation specific for the equipment being funded. Documentation may include fuel logs, purchase receipts or ledger entries. Fuel-based analyses are appropriate for projects that involve extended idling, including but not limited to street sweepers and solid waste collection vehicles.

(G) The emission factors in Appendix D, Tables D-3 and D-4 are based on EMFAC2011 zero-mile based emission factors. Information on EMFAC2011 is available at: http://www.arb.ca.gov/msei/modeling.htm. All other on-road emission factors in Appendix D are converted emissions standards based on the engine certification standards. On-road cost-effectiveness calculations shall use the same quantification methodology for the baseline calculation and the reduced emission calculation.

(1) Mileage-based calculations must use mileage-based emission factors in Appendix D, Tables D-3 and D-4, for the baseline and reduced emission calculation.

(2) Fuel-based calculations must use converted emissions standards for the baseline and reduced emission calculation. Converted emissions standards are found in Appendix D, Tables D-1, D-2, D-5 and D-6.

(3) Other calculation methods will be considered by ARB on a case-by-case basis.

(H) Cost-effectiveness calculations for projects with power take-off (PTO) will be considered by ARB on a case-by-case basis. Hours of PTO operation must be documented through hour meter records or data from the emission control module.

(I) The engine model year and applicable emission standard or family emission limit, not the vehicle model year, must be used to determine the appropriate emissions factors.

(J) Although electronic monitoring units are not required by the ARB, when an EMU is required by an air district, it is an eligible expense for any category.

(K) Refuse vehicles and street sweepers often have two engines, one for motive power and one for auxiliary operations. Since only the main engine is eligible for funding, emission benefits are calculated individually for each engine using fuel consumption rates for each unit if available. If individual engine fuel consumption information is not available, the applicant must provide and document an estimate for the typical activities of each engine based on best engineering judgment so that eligible surplus emissions reductions can be determined. The estimate must include factors such as fuel economy, typical operating loads, and hours of operation for each engine.

(L) Surplus requirements are determined by the regulation to which a project is subject. Any vehicle with an off-road engine that is subject to an on-road regulation must comply with the on-road surplus requirements described in this chapter. For example, a yard truck with an off-road engine that is subject to the Statewide Truck & Bus Regulation must comply with all off-road eligibility and funding criteria described in Chapters 7 and/or 9, as well as all on-road surplus criteria described in Section E.(2) of this Chapter.

(M) Glider kits are not an eligible expense for Carl Moyer Program funding.

(N) Case-by-case projects must receive approval from ARB prior to contract execution. These projects must follow the requirements as described in Chapter 3, Section X.

(O) All existing school buses must have a current CHP safety certification at the time funding is awarded to retrofit or repower the school bus (i.e., the school bus may not have a lapsed CHP safety certification), and must be currently registered with the Department of Motor Vehicles.

2. Compliance Check

After the district receives an application for any on-road project but before contract execution, the district must submit information regarding the project to ARB to check for outstanding violations and previous project funding. The district must also check for compliance with applicable regulations as described below and are not required to validate submitted information and will not be held liable if fleet owners falsify fleet information. All compliance check documentation must be kept in the project file.

(A) Districts must submit the following information:

(1) Violations and Previous Project Funding Check: The district shall email its ARB district liaison the registered owner's name, vehicle identification number (VIN), California Highway Patrol number, Department of Transportation number or Interstate Commerce Commission number for each vehicle to be repowered or retrofitted in the project, as well as all other vehicles in the applicant's fleet. Due to the large number of vehicles that could require compliance checks, air districts are encouraged to submit this data as soon as possible after receipt of the application.

(2) Regulations Compliance Check:

a. Vehicles Subject to Statewide Truck and Bus Regulation:

1. If the fleet owner reported in the Truck Regulations Upload and Compliance Reporting System (TRUCRS), districts must keep a copy of the fleet owner's summary report or certificate. The report or certificate must show that the fleet is currently compliant. Other compliance tools issued by ARB may be used to show compliance as they become available.

2. If the fleet owner is not required to report in TRUCRS but is required to take action (e.g., replace or retrofit engines in the fleet), the fleet owner may document compliance by providing one of the following for all vehicles in the fleet:

(a) Proof of purchase showing Verified Diesel Emission Control Strategy (VDECS) family name, serial number, VIN, and retrofit installer.
(b) Photographs of VDECS labels on engine and retrofit showing family name, serial number, and VIN.
(c) Photograph of 2007 or later engine label with VIN.

b. Vehicles Subject to Other On-Road Regulations:

1. If the fleet owner does not have documentation from ARB stating that they are currently in compliance, fleet information must be submitted to ARB to check compliance with the regulations. The fleet information needed for the compliance check may be more than that specified in section D.2.(A)(1) such as engine model year, GVWR, emission control systems, fleet compliance records, etc.

2. Applicants subject to the Public Agency and Utility Regulation must follow Section A.2. to demonstrate compliance.

3. A regulation index for statewide on-road regulations is available at https://ww3.arb.ca.gov/msprog/truckstop/tb/truckbus.htm

(B) Compliance Check Procedure:

(1) The liaison will forward the information electronically to the responsible parties at ARB. The liaison will email the air district the results of the compliance check within 10 business days.

(2) If the compliance check indicates that the vehicle has already received funding and is still under contract, the air district will be notified and the application must be rejected.

(3) If the compliance check indicates there is an outstanding violation with any truck in the applicant's fleet or that the fleet is not in compliance with statewide regulations, the air district shall inform the engine owner in writing that no disbursement may be made until the owner provides proof that each violation has been corrected and each fine has been paid and the fleet has been brought into compliance.

(4) If the outstanding violation is based on problems with the baseline engine (e.g., gross polluter), then a new engine must be installed instead of fixing the old engine. The engine owner must pay the fine for each violation and submit documentation of violation correction with, or before submitting, the invoice.

3. New Purchase or Electric Conversion

New purchase projects must be 30 percent cleaner than the current NOx emissions standard. Based on the 2010 NOx standard of 0.20 g/bhp-hr, engines that are certified to a NOx standard of 0.14 g/bhp-hr or lower and a PM standard of 0.01 g/bhp-hr or lower are eligible for new purchase funding. Vehicles with engines certified to a family emissions limit (FEL) are not eligible for new purchase funding. A school bus for an electric conversion project must be ten years old or newer. In the case of conversion of a school bus the CHP requires engineering plans, certified by a California licensed engineer, to be able to safety certify the school bus. All-electric school bus conversions using technologies that have already been demonstrated on school buses and that have engineering plans are eligible for funding. The maximum grant amount is 25 percent of the new purchase cost, with the exception of electric school bus purchase projects. The maximum grant amount for new electric school bus purchase or electric conversion projects shall not exceed the lesser of the following:

(A) A cost cap of $400,000 established pursuant to the Lower-Emission School Bus Program (LESBP) (Health & Safety Code § 44299.90);

- or -

(B) The total cost of the vehicle or the electric conversion;

4. Repower

A replacement engine for a repower project must be an ARB certified engine meeting emissions levels of 0.20 g/bhp-hr NOx and 0.01 g/bhp-hr PM or lower for school bus repower projects, or 0.50 g/bhp-hr NOx and 0.01 g/bhp-hr PM or lower for other repower projects. The maximum grant amount for school bus repower projects shall not exceed the cost cap of $70,000 established pursuant to the LESBP (Health & Safety Code § 44299.90). The maximum grant amount for other repower projects is $30,000.

However, due to technological constraints presented with the limited feasibility of newer engines with advanced emissions control equipment fitting into older chassis and maintaining durability, single vehicle repower, and electric conversion projects are not eligible for Moyer funding, except as described below.

There are a limited number of cases where the technical repower constraints described above do not apply. The economics of repower projects involving a large quantity of the same chassis and engine combination may allow compliance with the engine manufacturer quality assurance process that is equivalent to an OEM package. In these cases, a prototype vehicle (or vehicles) is thoroughly reviewed and tested to ensure that the installation meets OEM requirements, and the successful prototype installation is then replicated in other vehicles with the same

chassis and engine combination. Air districts may approve repower projects that meet the above described OEM quality assurance process, subject to the following:

(A) Carl Moyer Program funding may not be used for any costs associated with the prototype vehicle or vehicles.

(B) Repower contracts may not be executed until the prototype testing specified by the engine manufacturer is successfully completed.

(C) Written documentation from the engine manufacturer confirming that the prototype was successful must be maintained in the project file.

5. Retrofits

A list of currently verified retrofits may be found at http://www.arb.ca.gov/diesel/verdev/verdev.htm. A searchable database of verified retrofits is available at http://arb.ca.gov/diesel/verdev/vdb/vdb.php. Please refer to Appendix E for more details on retrofit verification.

(A) The maximum retrofit grant amount is:

(1) $10,000 or the total retrofit cost, whichever is less, for the highest level retrofit verified to achieve Level 3 PM reductions of 85 percent, and NOx reductions if available for the specific engine.

(2) $20,000 or the total retrofit cost, whichever is less, for retrofit devices verified to reduce NOx and PM emissions equivalent to 2007 engine standards of 1.20 g/bhp-hr NOx and 0.01 g/bhp-hr PM.

(3) $20,000 or the total retrofit cost, whichever is less, for retrofit devices installed on school buses.

(B) Only ARB-verified retrofits are eligible for funding.

(C) Retrofit projects that reduce NOx emissions must be verified by ARB to a NOx reduction level of at least 15 percent from the baseline engine to claim NOx reductions from the project.

(D) Retrofit projects must use the highest level technically feasible technology verified for the engine being retrofitted. ARB considers the retrofit device that achieves the highest level of PM reductions (Level 3 - 85 percent) and the highest level of NOx reductions to be the highest level retrofit.

(E) Fleets/agencies affected by fleet regulations may be able to use Carl Moyer Program funding for retrofit projects if the project life expires prior to the final

compliance date or achieves reductions beyond the regulatory requirements. See applicable criteria below for each fleet regulation.

(F) If the retrofit device reduces both NOx and PM emissions and is being installed to comply with a PM requirement, only the costs of the NOx reductions are eligible for Carl Moyer Program funding.

(G) The full cost of a retrofit kit, up to the maximum incentive amount described above, and maintenance of the retrofit during the project life may be funded subject to the weighted cost-effectiveness limit.

(H) Only the minimum ARB verified levels of NOx and PM emission reductions will be used to calculate cost-effectiveness for retrofit projects.

E. Funding Eligibility for Projects Subject to In-Use Regulations

Most on-road vehicles are subject to an in-use regulation. Funding is available for emissions reductions that are early or extra to regulatory requirements. In addition, fleets that have achieved compliance with the final regulatory deadline may be eligible for funding. Unless otherwise noted, retrofit, repower, TRU, and idling reduction funding is only available to fleets with ten or less on-road vehicles with GVWRs over 14,000 pounds. New purchase projects have no fleet size limitation. For detailed information on eligible emissions reductions and calculation methodology, please see the 2011 on-road supplemental guidance located at: http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm.

1. Drayage Trucks

(A) Current Drayage Trucks: Limited Carl Moyer Program funding is available for all drayage trucks, as defined in California Code of Regulations, title 13, section 2027(c)(15) up to one year before the applicable compliance deadline. For repowers, funding is available for the NOx and reactive organic gases (ROG) emission reductions between engines certified to a NOx emissions standard of 1.20 grams per brake horsepower-hour (g/bhp-hr) and 0.20 g/bhp-hr or cleaner. For new purchases, funding is available for the NOx and ROG emission reductions between engines certified to a NOx emissions standard of 0.20 g/bhp-hr and a NOx standard that is at least 30 percent cleaner. There is no final funding date for new purchases. There are no surplus funding opportunities for retrofits. Beginning on January 1, 2023, drayage trucks will be subject to, and must be surplus to, the Statewide Truck and Bus Regulation.

(B) Former Drayage Trucks: The following requirements apply for vehicles that previously operated as a drayage truck, as defined in California Code of Regulations, title 13, section 2027(c)(15):

(1) Vehicles that operated one or more times as drayage trucks in the previous two years, but no longer operate as drayage trucks, are not prohibited from receiving Moyer funding.

(2) Vehicles that previously operated as drayage trucks must be contractually prohibited from drayage operations that are regulated by California Code of Regulations, title 13, section 2027 throughout the contract term.

(3) To help ensure that the replacement vehicle does not operate as a drayage truck during the contract term, the replacement vehicle will be added to the Drayage Truck Registry as non-compliant until the contract end date.

2. Private Fleets (Statewide Truck & Bus Regulation)

For vehicles that are subject to the Statewide Truck & Bus Regulation (Regulation), the following final funding dates apply. Please note that the final funding dates listed may not apply to each project and are provided to give a general timeframe of funding eligibility based on certain compliance dates of the regulation. The actual final funding date for specific projects will vary depending on fleet size, regulatory compliance option, GVWR, engine model year, pollutant type, and other factors.

(A) Fleet size of 1-10 trucks: Funding must be provided no later than one year before the applicable compliance deadline for each pollutant. Depending on the compliance option used, the final funding date for PM, NOx, and ROG is December 31, 2021.

Table 4-4
Final Funding Dates for Fleets of 1-10 Vehicles

Fleet Type	PM	NOx
1-10 vehicles	12/31/2021	12/31/2021

(B) Agricultural Vehicles: Eligibility for agricultural vehicles as defined in California Code of Regulations, title 13, section 2025(d)(6) depends on annual mileage accrual and engine model year. Funding for agricultural vehicle projects must be provided no later than one year before the applicable compliance deadline. The final funding date for PM, NOx, and ROG is December 31, 2021.

Table 4-5
Final Funding Dates for Agricultural Vehicles

Fleet Type	PM	NOx
Agricultural Fleets	12/31/2021	12/31/2021

(C) Low-Mileage Work Trucks & Vehicles That Operate Exclusively in NOx Exempt Areas: Trucks following the Low Mileage Work Truck Phase-in Option, as defined in California Code of Regulations, title 13, section 2025(p)(2), are eligible for PM funding through December 31, 2016 and NOx and ROG funding through December 31, 2021. Vehicles that operate exclusively in NOx Exempt areas of the state that are following the compliance option specified in California Code of Regulations, title 13, section 2025(p)(1) are eligible for PM funding through December 31, 2017 and are eligible for NOx and ROG funding indefinitely. Funding must be provided no later than one year before the applicable compliance deadline. Participant contracts for NOx exempt vehicles must include a provision that requires the vehicle to operate exclusively in NOx exempt areas of the state as defined in California Code of Regulations, title 13, section 2025(d)(45).

Table 4-6
Final Funding Dates for Low-Mileage Work Trucks and Vehicles in NOx Exempt Areas

Fleet Type	PM	NOx (& ROG)
Low-Mileage Work Trucks	12/31/2016	12/31/2021
NOx Exempt Vehicles	12/31/2017	No Final Date

(D) Log Trucks: Log trucks as defined in California Code of Regulations, title 13, section 2025(d)(39), are eligible for funding through December 31, 2021. Funding for retrofits and repowers for log trucks must be provided no later than one year before the applicable compliance deadline. Funding for new purchases has no final funding date. Eligibility requirements for the replacement of log trucks following the Log Truck Phase-in Option specified in California Code of Regulations, title 13, section 2025(m)(12) are available in the Truck Improvement/Modernization Benefitting Emission Reductions (TIMBER) document at https://ww3.arb.ca.gov/msprog/moyer/timber/timber.htm or in Chapter 5. Log truck fleets do not have a fleet size eligibility limit for funding. No more than 10 log trucks under common ownership may be funded per year.

3. Public Agency and Utility Fleets

Due to low mileage, public agency and utility vehicle projects are generally eligible only for minimal grant amounts.

(A) All public agency and utility vehicle projects must submit total fleet compliance records as described in the Fleet Rule for Public Agencies and Utilities showing that the funds will not be used to meet rule requirements.

(B) Fleets that have achieved all applicable final PM BACT compliance requirements are eligible for NOx funding for retrofit projects and NOx and

ROG funding for repower projects. New purchase projects have no final funding date. Starting January 1, 2021, private utility vehicles, as defined in California Code of Regulations, title 13, section 2025(d)(48), will be subject to the Truck and Bus Regulation. Funding must be provided no later than one year before the applicable compliance deadline.

(C) Low-Population County fleets must declare with submittal of their application which compliance schedule they will follow. Fleets that follow the compliance path for low population counties have limited PM funding opportunities through December 30, 2016 with a one year surplus period. Fleets that follow the accelerated turn-over compliance path have limited PM funding opportunities through December 30, 2024.

4. School Buses

(A) School buses are eligible for Carl Moyer Program funding if they meet the general program criteria above. School bus projects do not have a fleet size limit, and can be funded up to the maximum grant amounts shown in Table 4-2. Internal combustion engine school buses are eligible only for NOx and ROG reductions. Zero emission school bus projects including new purchases, replacements, repowers, and electric conversions are eligible for NOx, ROG, and PM reductions.

(B) The cost-effectiveness limit for school bus projects is $276,230/ton. This cost-effectiveness limit allows consistency with the LESBP cost cap for typical zero-emission school bus replacement projects. This cost-effectiveness value is based on average school bus operating usage from a limited number of previously-funded Carl Moyer school bus projects and the LESBP cost caps. This cost-effectiveness limit may reduce some school bus project grants to be lower than the LESBP cost caps.

5. Solid Waste Collection Vehicles (SWCV)

Solid waste collection vehicles are eligible for limited funding opportunities, but emission benefits are generally low because older vehicles have already been replaced or retrofitted to comply with regulatory requirements.

(A) SWCV fleets that have achieved compliance with the final regulatory deadline are eligible for NOx and ROG funding.

(B) Solid waste transfer trucks are subject to the Statewide Truck & Bus Regulation, and must meet applicable eligibility criteria identified above.

6. Transit Vehicles (Urban Buses and Transit Fleet Vehicles)

Transit vehicles are eligible for limited funding opportunities, but emission benefits are generally low because most older vehicles have already been replaced or retrofitted to comply with regulatory requirements. Transit Vehicle projects do not have a fleet size limit.

(A) Transit Fleet Vehicles: Transit Fleet vehicles that have achieved compliance with the final regulatory deadline are eligible for funding.

(B) Urban Buses: Urban Bus fleets that have achieved compliance with the final regulatory deadline are eligible for funding.

(C) The Federal Transit Administration (FTA) provides up to an 80 percent grant for new urban bus purchases and repowers. For projects receiving FTA or other public funding, the incremental cost must be reduced by the publicly funded grant amount. See Chapter 2: General Criteria for more information.

7. Idling Reduction

Idling reduction projects are eligible for limited funding opportunities, but emission benefits are generally low because heavy-duty trucks are already required by regulation to limit idling emissions.

(A) Heavy-duty trucks are eligible for zero-emission technologies for APUs. The baseline for these projects would be an ARB certified Tier 4 engine with a level 3 diesel emission control strategy.

(B) An hour meter or other means to measure usage must be installed with an idling reducing project to track operation. The participant shall provide this information to ARB or the air district upon request during the life of the project.

(C) The installation of electric power infrastructure at truck stops and distribution centers is eligible for funding through an air district's Carl Moyer Program match funds.

(D) Advanced truck stop electrification - Carl Moyer Program funds may be used for installing advanced truck stop electrification, such as external systems that provide heating, cooling, and other energy needs. In these cases, a partial payment would be made upfront to help offset the initial capital investment. The remainder of the grant amount would be paid out in installments based on system utilization. The amount of the initial payment and subsequent installments will be determined on a case-by-case basis.

(E) Other idling reducing projects may be considered on a case-by-case basis.

8. Transport Refrigeration Units (TRU)

Transport refrigeration units projects are eligible for limited funding opportunities, but emission benefits are generally low because many older TRUs have already been replaced to meet regulatory requirements.

(A) Funding opportunities may exist for a zero emission new purchases or repowers on a case-by-case basis.

(B) Alternative technologies such as electric standby and pure cryogenic systems are not required to be verified, but ARB must review and approve such systems in writing on a case-by-case basis.

(C) The participant shall install an hour-meter or other means to measure usage on the TRU to track operating hours, and shall provide this information to ARB or the air district upon request.

Chapter 5: ON-ROAD HEAVY-DUTY VEHICLES FLEET MODERNIZATION

This chapter describes the minimum criteria and requirements for the Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) On-Road Heavy-Duty Vehicles (HDV) Fleet Modernization projects.

A. Projects Eligible for Funding

All funding eligibility provisions as described in Chapter 4, Section E. also apply in this chapter.

Fleet modernization provides incentives to replace old high-polluting heavy-duty vehicles with newer, lower-emission replacement vehicles, providing real emission benefits earlier than would have been expected through normal attrition.

Please see Section C (Project Criteria) for detailed minimum eligibility requirements. Most on-road vehicles are subject to more stringent requirements as described in Section C. (1).

The following HDV fleet modernization projects may be eligible for funding. Note: the existing old vehicle engine must be model year 2006 or older. Existing old school buses and log trucks may have an engine of any model year.

1. New Replacement Vehicle Purchase: The purchase of a new vehicle or school bus with an engine certified to the 2007 or newer emission standards to replace an existing vehicle that is to be scrapped.

2. Used Replacement Vehicle Purchase: The purchase of a used vehicle with an engine certified to the 2007 or newer emission standards to replace an existing vehicle that is to be scrapped. School buses cannot be replaced with a used vehicle.

B. Maximum Eligible Funding Amounts

Table 5-1 summarizes the maximum eligible funding for each fleet modernization project. All projects are also subject to the cost-effectiveness threshold defined in Appendix G, except for school bus projects which are subject to a unique
cost-effectiveness limit as stated in Chapter 4: On-Road Heavy-Duty Vehicles.

Table 5-1
Maximum Funding Amounts for Fleet Modernization Projects

Oxides of Nitrogen (NOx) Family Emission Limit or NOx emission standard[1] grams per brake horsepower hour (g/bhp-hr)	Maximum[2]
0.20 g/bhp-hr (Heavy Heavy-Duty (HHD))	$60,000
0.50 g/bhp-hr (HHD)	$50,000
1.20 g/bhp-hr (HHD)	$40,000
0.20 g/bhp-hr (Medium Heavy-Duty (MHD))	$40,000
0.50 g/bhp-hr (MHD)	$30,000
1.20 g/bhp-hr (MHD)	$25,000
0.20 g/bhp-hr (Light Heavy Duty (LHD))	$30,000
0.50 g/bhp-hr LHD	$20,000
1.20 g/bhp-hr LHD	$15,000
0.20 g/bhp-hr New Internal Combustion Engine School Bus	$165,000
New Zero Emission School Bus	$400,000
New School Bus Certified to Optional Low-NOx Standards	$220,000
New Hybrid School Bus	$220,000

[1] Applies to new or used vehicles unless otherwise noted.

[2] For fleets of three or fewer vehicles, the funding amount cannot exceed 80 percent (80%) of vehicle value for used replacement vehicle or 80% of invoice for new replacement vehicle. For fleets with more than three vehicles, the funding amount cannot exceed 50 percent (50%) of the vehicle value for used replacement vehicles or 50% of the invoice for new replacement vehicles. This limit does not apply to school bus projects. For fleets of any size, funding for school bus projects cannot exceed 100 percent (100%) invoice.

C. Project Criteria

The minimum qualifications for fleet modernization projects are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Criteria

   (A) For vehicles that are subject to in-use regulations, please see the eligibility requirements in Section E of Chapter 4: On-Road Heavy-Duty Vehicles.

   (B) Any fleet modernization project that would replace an existing vehicle with an off-road engine that is subject to an on-road regulation must comply with the on-road surplus requirements. For example, a yard truck with an
   off-road engine that is subject to the Statewide Truck & Bus Regulation (including yard trucks used primarily in agricultural operations) must comply with all off-road Carl Moyer Program criteria described in Chapters 7 and/or 9, as well as all surplus criteria described in Section E of Chapter 4.

   (C) Existing glider kit vehicles are eligible. The replacement vehicle must be a complete original equipment manufacturer vehicle and not a glider kit.

2. Participant Requirements

Participants must meet the following

requirements:

(A) The participant must provide conclusive documentation of annual mileage or vehicle usage in California. The participant must certify that at least 51 percent of total usage is in California.

(B) The participant must currently own and have operated the old vehicle for the previous twenty-four (24) months, documented through a copy of the old vehicle title. If it is unclear whether a vehicle is owned or leased by a participant, the air district will determine whether the vehicle is eligible.

(C) The participant must submit documentation of annual miles traveled or gallons of fuel consumed for the previous twenty-four (24) months to determine cost-effectiveness. Examples of documentation include logbooks, fuel records, and maintenance records or tax records.

(D) The participant must provide copies of California registration as specified in Section 3 below.

(E) The participant must provide copies of proof of insurance for the old vehicle for the previous twenty-four (24) months.

(F) The participant must be in compliance with all applicable air quality laws and regulations; all outstanding citations must be paid.

(G) The participant must be the registered owner of the replacement vehicle for the project life.

(H) The participant must maintain replacement value insurance coverage for the project life.

(I) Throughout the contract term, the participant must complete the following minimum reporting requirements:

(1) Provide registration and proof of insurance to the air district annually.

(2) Provide annual reports that include information such as hours of operation, miles driven in the air district and California, the amount of fuel consumed in the twelve months preceding the report date, details regarding maintenance and servicing, and any other items specified by the air district.

(3) If the replacement vehicle is involved in an accident, report the accident to the air district within 10 business days. The participant

must provide a police report of the accident, a letter from the insurance company regarding the accident and any other additional information requested by the air district. The participant must repair the vehicle and return it to operation, if possible. If the vehicle is totaled, the participant and the air district staff must come to an agreement regarding any requirements that still need to be met.

3. Existing Vehicle Requirements

All existing vehicles must meet the following

conditions:

(A) The existing vehicle must have an engine of model year 2006 or older, except for school buses and log trucks which may have an engine and chassis of any model year.

(B) The existing vehicle must either be 1) currently registered and have been registered in California for the past twenty-four (24) months; or 2) must have been registered in California for the previous eight (8) consecutive months supplemented by alternate documentation showing California operation for the past twenty-four (24) months.
If the existing vehicle operates seasonally, then the existing vehicle may be eligible to participate if it has been registered in California for three (3) to six
(6) continuous months per twelve (12) month period for the previous twenty four (24) months. DMV partial year registration documentation for each period the vehicle was registered must be included with the application.

(C) The existing vehicle must meet the criteria for either an LHD vehicle, MHD vehicle, or an HHD vehicle, as defined below:

(1) LHD vehicles must have a manufacturer Gross Vehicle Weight Rating (GVWR) of 14,001-19,500 pounds.

(2) MHD vehicles must have a manufacturer GVWR of 19,501 through 33,000 pounds.

(3) HHD vehicles must have a manufacturer GVWR of 33,001 pounds or greater.

(4) GVWR may be documented with a photo of the vehicle manufacturer tag or a copy of the manufacturer build sheet. Air districts may request ARB approval of alternate GVWR documentation on a case-by-case basis.

(D) The existing vehicle must be in operational condition, as determined through a California Highway Patrol (CHP) Biennial Inspection of Terminals (BIT) or

equivalent air district-approved inspection. If the air district does not conduct a pre-inspection, the following methods may be used:

(1) The vehicle owner may submit a completed CHP 90-Day Safety Inspection Form documenting an inspection that occurred within 90 days of the application date;

- or -

(2) An air district approved contractor may conduct the inspection of the old vehicle and provide pictures verifying that the vehicle is in operational condition. The participant will pay the cost of the inspection.

(E) All existing school buses must have a current CHP safety certification as of December 31, 2008, and at the time funding is awarded to replace the bus (i.e., the school bus may not have a lapsed CHP safety certification), and must be currently registered with the DMV.

(F) If the old vehicle engine tag is missing, then verification of the engine information can be satisfied with the engine serial number. The participant must provide verification of the engine make, model, model year, engine serial number, and horsepower from the manufacturer. The participant may also verify the horsepower with the results of a dynamometer test. The dynamometer test will take into account a 15 percent loss in actual horsepower, accounting for transmission loss. Verification can include a letter or a printout from an engine manufacturer or dealership. On a case-by-case basis, the Air Resources Board (ARB) may approve other means of obtaining the information.

4. Replacement Vehicle Requirements

All replacement vehicles must meet the following

conditions:

(A) Emission Standards: Replacement vehicles with a 2007 model year or later engine certified to a particulate matter (PM) emission standard of 0.01 g/bhp-hr and a NOx family emission limit or NOx standard level of 1.20 g/bhp-hr or lower are eligible for funding.

(B) Mileage: A used HHD replacement vehicle must have less than 500,000 miles, a used MHD replacement vehicle must have less than 250,000 miles, and a used LHD replacement vehicle must have less than 150,000 miles with odometer verification to occur at the post inspection.

(C) Horsepower: If the replacement engine horsepower is more than 25 percent greater than the existing engine horsepower, it must be de-rated (reduced)

to not exceed a 25 percent increase. In limited situations, the air district may approve a greater than 25 percent increase in horsepower.

(D) Weight Class: The replacement vehicle must be in the same weight class as the existing vehicle (either LHD, MHD, or HHD). An MHD vehicle can replace an HHD vehicle if they both have the same axle configuration (e.g. an existing HHD vehicle with two axles can be replaced with an MHD vehicle with two axles) but the funding amount must be at the MHD funding level.

(E) Engine Class: On-road heavy-duty (HD) vehicles (with GVWR over 14,000 pounds) must be powered by an engine certified to the HD intended service class as shown on the engine certification Executive Order. However, the following cases may be allowed:

(1) MHD engines may be installed in HHD vehicles with GVWR up to 36,300 pounds (10 percent higher than 33,000 pounds GVWR) with written warranty verification by the engine and chassis manufacturer. A copy of the written warranty verification must be maintained in the air district project file.

(2) HHD engines may be installed in MHD vehicles if necessary for vocational purposes but only if the GVWR are within ten (10) percent of the HHD intended service class (i.e., GVWR of 29,701 pounds or greater).

(F) Body and Axle Configuration: The replacement vehicle must have the same axle and body configuration as the old vehicle. The air district may allow slight changes based on the latest technology. Changes must be requested and approved prior to the purchase of the replacement vehicle.

(G) Warranty Requirements: The following warranty requirements apply:

(1) Except for school buses, all participants must purchase a minimum of a one-year or 100,000-mile major component engine warranty for the replacement new or used vehicle. The warranty must cover parts and labor. If the purchase of a new or used replacement vehicle already includes a minimum one year or 100,000 mile warranty as specified above, a separate supplemental warranty is not required. However, it is recommended that the highest grade warranty be purchased in order to avoid expensive repairs in the future.

(2) No Carl Moyer Program funds will be issued for maintenance or repairs related to the operation of the vehicle. The participant takes sole responsibility for ensuring that the vehicle is in operational condition throughout the agreement period.

(H) Replacement vehicles may be purchased from a private party provided all required documentation is submitted. This includes warranty requirements and all other fleet modernization requirements.

(I) Engine and Emission Control Modifications: Emission controls on the replacement vehicle engine cannot be modified except as permitted by law. Unauthorized modification to engine performance including, but not limited to, changes in horsepower, emission characteristics, engine emission components (not including repairs with like-original equipment manufacturers replacement parts), and modifications to the engine's emission control function or the electronic monitoring unit are not allowed.

(J) Agricultural Vehicle Reporting: Replacement Agricultural Vehicles must comply with the Reporting Requirements for Agricultural Fleets as specified in California Code of Regulations, title 13, sections 2025(r) and (s).

5. Determining Grants

Grant award determinations must be made with the following

considerations:

(A) Grant awards are based on the average California usage during the previous twenty-four (24) months. Fleet averages cannot be used. If a fleet has recently reported in the Truck Regulations Upload and Compliance Reporting System (TRUCRS) to follow a limited usage compliance option (e.g., Low Mileage Work Truck Option, NOx Exempt Area Option, etc.), and the historical usage is outside of the limits of the option, the grant amount must be decreased to only include the usage limits of the option. Participants must submit conclusive documentation of mileage or fuel consumed including logbooks, fuel records, and maintenance records maintained for individual vehicles.

(B) The emission benefit of the project is calculated based on the difference in emission factors of the replacement, new vehicle engine (new emission factors) and the baseline vehicle engine (baseline emission factors). The applicable emission factors as described in Chapter 4, Section D.1.(G) must be used.

(C) The grant amount will be the lesser of the following:

(1) The cost-effective value of the project based on the weighted emission benefits (school bus projects will use the cost-effectiveness limit provided in Chapter 4: On-Road Heavy-Duty Vehicles);

-or-

(2) The maximum grant amount shown in Table 5-1.

(D) The replacement of two old, like trucks with one replacement truck is eligible for funding. Each old truck and the replacement truck must comply with all of the applicable guidelines. To determine cost-effectiveness, the annual emissions of the two old trucks are determined using emissions factors that correspond to the model year of each truck. The usage of the two old trucks is summed to establish projected replacement truck usage. The maximum allowable combined mileage is 60,000 miles per year (or 30,000 miles per truck per year). Replacement trucks are eligible for only one grant based on the combined usage – the amount of the grant award is not doubled.

(E) The minimum eligible project life for all projects is one year. The maximum eligible project life for cost-effectiveness calculations is as follows:

(1) For fleets of three or fewer vehicles that are subject to the Statewide Truck & Bus Regulation or the Statewide Drayage Truck Regulation, the maximum project life is five years.

(2) Log trucks and public fleet vehicles in low-population areas have a maximum project life of five years.

(3) The maximum project life for 1977 and newer school buses is 11 years.

(4) For all other vehicles outside subsections (E)(1) through (E)(3) above, the maximum project life is three years.

(5) The surplus period may be less than the maximum project life due to compliance deadlines specified in the Statewide Truck & Bus Regulation (California Code or Regulations, title 13, § 2025). See Chapter 4 Section E.4. of these Guidelines for school bus surplus criteria.

(F) Grant funding can only be used to pay for items essential to the operation of the vehicle.

(G) The participant may obtain financing to assist in the purchase of a replacement vehicle.

6. Air District Administrative Requirements

(A) Air districts must include fleet modernization as a funding option in the air district's Carl Moyer Program Policies and Procedures before funding fleet modernization projects. The Policies and Procedures must include the administrative tools that are needed to manage fleet modernization projects,

including memorandum of understandings (MOU) or agreements with vehicle dealerships and dismantlers, reimbursement procedures, inspections, monitoring and enforcement, contract development, etc. Air districts are not required to submit the initial fleet modernization policies and procedures to ARB for approval, but it must be available upon request.

(B) Air districts may fund fleet modernization projects through a regional program administered by one designated air district. The designated air district may be located within the region, or may be a large air district located outside the region.

(C) The air district may make full payment at the time the new vehicle is delivered to the applicant under the following framework:

(1) Air district staff or an air district approved contractor must complete the pre-inspection of the old vehicle and new vehicle to make sure the vehicles comply with program requirements.

(2) Air districts must sign a separate MOU with the dealer and the dismantler that contain, at a minimum, the program requirements (including, but not limited to, the requirement that the dealer delivers the existing vehicle to a qualified dismantler within 30 calendar days of the date that the old vehicle was turned in to the dealer by the applicant) that are expected of each entity and the repercussions for non-compliance with the terms of the MOU for each entity.

(3) Air districts must ensure the vehicle and engine are scrapped within 60 calendar days of the dismantler's receipt of the vehicle. This must be confirmed through post-inspection by the air district or an air district approved contractor. The destruction of the old vehicle and engine must be properly documented in accordance with the Carl Moyer fleet modernization program requirements.

7. Dealer Requirements

(A) Air districts are encouraged to establish contracts with dealers that sell replacement vehicles to fleet modernization participants. Reimbursement cannot be issued until all forms are submitted and approved by the air district.

(B) Vehicle dealers must:

(1) Provide basic information to vehicle owners about the fleet modernization program.

(2) Help participants complete the application, if necessary. It is important to make sure that all information is filled out correctly and that the participant understands the meaning of the program and the contract. Once complete, the dealer submits the application package to the air district.

8. Reimbursement: To ensure that an application package is complete, the following items must be included and complete prior to reimbursement:

(A) Signed and complete application and fully executed contract.

(B) Documentation showing that the existing vehicle is roadworthy. This includes documentation showing that the old vehicle has passed a CHP BIT inspection in the past 90 days or conduct an equivalent vehicle inspection and sign as appropriate. If documentation is provided by a dealership, the air district reserves the right to audit the dealership's record of inspection.

(C) Invoices of all work performed on the replacement vehicle. The invoices must include all engine, transmission, engine horsepower derating, body and other work performed on the replacement vehicle.

(D) Digital photographs of the existing vehicle and the replacement vehicle. The air district will specify the required digital format. Reimbursement will not be processed until all photographs are received and verified by the air district. All photographs must be clear, and all VIN and engine serial numbers must be legible.

(1) Photographs of the old vehicle must include the following views:
   a. Right Side - hood down.
   b. Front - hood down.
   c. Left Side - hood down.
   d. VIN Tag - inside vehicle or on frame rail.
   e. Engine Serial Number and Engine Information, if available (make, model year, engine family) - either tag or stamp on block.
   f. License plate.
   g. Rear.

(2) Photographs of the replacement vehicle must include the following views:
   a. At least one side of the vehicle.
   b. VIN Tag - inside vehicle or on frame rail.
   c. Engine Serial Number and Engine Information – tag.
   d. License plate.
   e. Diesel Emission Control Device (if available).
   f. Odometer Reading.

(E) Certification that the old vehicle will be delivered to a qualified dismantler within 30 calendar days of receipt of the old truck. The certification must include the make, model, year, vehicle identification number (VIN), engine make, engine serial number, and the date the vehicle is expected to be delivered to the dismantler.

(F) Documentation of replacement vehicle warranty and registration.

(G) Proof of replacement vehicle financing. The financing package will enable the air district to determine the reimbursement costs that may be accrued in case the participant defaults on the contracted performance requirements.

(H) Dealerships must possess pre-inspection documentation of the existing and replacement vehicles prior to releasing the replacement vehicle to the participant. Upon request of the air district, ARB may waive inspection requirements.

(I) Proof of replacement vehicle sale after the application and all required documentation have been approved by the air district.

(J) A third party (e.g., engine dealer or distributor) may complete an application or part of an application on an owner's behalf only if the vehicle owner signs and agrees to the application. Applications must include a signature section for third parties. The third party signature section must include signature and date lines, and sections for the third party to disclose how much they are being paid, if anything, to complete the application and the source of funds used to pay them. To make the Carl Moyer Program accessible to all potential applicants, including those that cannot afford to hire third party assistance, air districts are encouraged to provide assistance to applicants.

9. Compliance Checks: Fleet modernization projects are subject to the compliance check process described in Chapter 4, Section D.2.

10. Inspections: Air districts may enter into a contract, written agreement, or memorandum of understanding with a contractor to perform project inspections (pre-inspections, post-inspections, or dismantle inspections). If an air district chooses to use contractors to perform inspections, air district staff must conduct and document at least one inspection on each project without the use of a contractor. Air districts must ensure all inspection requirements are met and shall retain legal responsibility for full compliance with the inspection provisions of these Guidelines, regardless of the use of contractors.

11. Dismantler Requirements

(A) Fleet modernization requires that the existing truck be dismantled. This requirement has been established to ensure that emission reductions are

real, preventing the truck from continuing to emit high levels of pollutants. Destruction of the existing vehicle chassis and engine permanently removes the old, high emitting vehicle from service. The existing vehicle and engine specified in the application must be dismantled, and may not be substituted with a different vehicle.

(B) To participate in the fleet modernization program, dismantlers must:

(1) Enter into an agreement with the air district.

(2) Be licensed by DMV as an auto-dismantler.

(3) Possess a current, valid California Environmental Protection Agency Hazardous Materials Generators Permit.

(4) Be in compliance with all local, state and federal laws and regulations.

(C) The dismantler must do the following for each vehicle:

(1) Dismantle the old vehicle in accordance with program guidelines within 60 calendar days of receipt. Upon dismantler request, the air district may approve an extension.

(2) Destroy and render useless the existing vehicle engine as specified in Chapter 3: Program Administration.

(3) Completely sever the frame rails of the old vehicle to ensure that the vehicle will not be used again.

(4) Air district staff or the dismantler must take photographs of the destroyed engine and severed frame rails. Dismantler photographs of the destroyed engine block and severed frame rails must be provided to the air district within ten (10) business days of dismantling the vehicle. The following picture views must be taken:
a. Front of vehicle with hood down.
b. VIN tag.
c. Engine serial number either stamped on the block or on the tag.
d. Destroyed engine block either in-frame or out of frame as specified in Chapter 3: Program Administration.
e. Completely severed frame rails.

(5) Prepare and submit to DMV either a "Non-Repairable Vehicle Certificate" using an "Application for Salvage Certification or Non-Repairable Vehicle Certification" (REG 488C), or a Notice of Acquisition/Report of Vehicle To Be Dismantled (REG 42) ensuring the VIN can never be registered again in California.

(6) Upon request of the air district, ARB may approve an alternative disposition for the old vehicle.

12. Recovery of Grant Funds

(A) The air district must establish a mechanism to assure the participants fulfill all contractual obligations, including owning and operating the replacement vehicle for the project life. The air district will determine noticing requirements and the method to achieve fund recovery. Air districts may consider the following option:

(1) List the air district as co-lien holder on the title of the replacement vehicle for the term of the agreement. The participant must submit a completed Uniform Commercial Code-1 Financing Statement Form to the California Secretary of State, with a copy sent to the air district, within 30 days of the purchase of the replacement vehicle. The financing statement must have the air district as the secured party and the vehicle should be listed as collateral.

(2) If the replacement vehicle is sold during the project life, the new owner must assume the obligations under the participant's contract with the air district and comply with the terms and conditions of the contract. The air district must approve the change in ownership prior to the sale.

Chapter 6: EMERGENCY VEHICLES (FIRE APPARATUS)

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) fire apparatus projects.

A. Projects Eligible for Funding

This chapter specifically focuses on fire apparatus including, but not limited to, pumpers, ladder trucks, and water tenders. These fire apparatus can go by different names regionally; however, this chapter will use the terms "fire apparatus" and "fire trucks" interchangeably to refer to fire-related emergency vehicles collectively. Medium heavy-duty (MHD) or heavy heavy-duty (HHD) diesel fire apparatus are eligible for funding under this chapter.

Eligible projects are those in which a new or used replacement vehicle with an engine meeting the current model year California emission standard replaces an older, more polluting fire apparatus. The older, replaced vehicle must be destroyed. A fire truck reuse option is also available on a case-by-case basis. The fire truck reuse option allows fire departments to give away the existing old vehicle and destroy another older vehicle in its place. See Section C (Project Criteria) below for detailed minimum eligibility requirements.

B. Maximum Eligible Funding Amounts

Table 6-1 summarizes the maximum eligible funding amount for all project types in this category. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 6-1
Maximum Funding Amount for Carl Moyer Emergency Vehicle Projects

Project	Maximum
Fire Apparatus Replacement	80 percent

C. Project Criteria

1. General Criteria

The minimum qualifications for fire apparatus replacement are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria, and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

(A) Eligible Vehicles: Authorized emergency vehicles as described in the California Vehicle Code, sections 27156.2 and 165 including, but not limited to pumpers, ladder trucks, and water tenders are eligible for funding.

(B) Eligible Weight Class: Heavy-duty diesel fire apparatus with a gross vehicle weight rating (GVWR) greater than 14,000 pounds are eligible for funding.

(C) Engine Certification: An engine Executive Order (EO) must be provided for both the existing old engine and the replacement engine. The intended service class will be used to determine if the engine is certified as a MHD or HHD engine. If the baseline engine EO is not available, case-by-case approval is necessary to determine the weight class of the old vehicle.

(D) Intended Service Class Flexibility: Engines certified to the MHD service class (i.e., GVWR between 14,000 and 33,000 pounds) must be installed in a MHD vehicle as shown on the engine certification EO. However, MHD engines may be installed in a vehicle with a GVWR up to 36,300 pounds (10 percent higher than 33,000 pounds GVWR) with written warranty verification by the engine and chassis manufacturer. A copy of the written warranty verification must be maintained in the air district project file.
Engines certified to the HHD service class (i.e., GVWR greater than 33,000 pounds) may be installed in a vehicle no less than GVWR 29,701 pounds (10 percent lower than 33,001 GVWR).

(E) Auxiliary Engine: The main engine providing motive power to the fire apparatus is eligible for funding. Any auxiliary engine is ineligible.

(F) Eligible Project Cost: A Carl Moyer Program grant for a fire apparatus project shall not exceed a maximum of 80 percent of the eligible project cost. Eligible project costs include the cost of the cab and chassis including parts that are integrated into the vehicle and not bolted on and movable, such as the tank on the water tender. The cab and chassis cost may include but is not limited to the following:

(1) The capital cost of the cab.

(2) The capital cost of the chassis which may include but is not limited to:

a. Engine.
b. Transmission.
c. Suspension system.
d. Steering system.
e. Frame.
f. Electrical system.
g. Cooling System.
h. Fuel system.

i. Emission system.

(3) Tax and transport for eligible parts or costs.

(4) Labor for installation of or modification to parts eligible for funding.

(G) Municipal Lease: For municipal leases, incremental lease costs such as the lease acquisition fee may be included as an eligible project cost. Documentation must be provided to the air district.

(H) Project Life: The maximum project life available for fire apparatus is 14 years and represents the average remaining useful life of the vehicle.

(I) Engine Model Year: If the vehicle model year and the engine model year are different, the engine model year will be used to determine the baseline emissions for calculations.

(J) Emission Factors: Cost-effectiveness calculations will use emission factors in Appendix D, Tables D-9a and D-9b (new grams/gallon and grams/mile tables) depending on the vehicle weight class and documented usage.

(1) Fuel-based and mileage-based calculations must use fire apparatus emission factors in Appendix D, Tables D-9a and D-9b for the baseline and reduced emission calculations.

(2) Hour-based calculations will be considered by the Air Resources Board (ARB) on a case-by-case basis.

(K) Case-by-Case: A project for which a case-by-case determination is requested must receive approval from ARB prior to contract execution. These projects must follow the requirements as described in Chapter 3: Program Administration, Section Y.

2. Compliance Check

After the district receives an application for any fire-related emergency vehicle project but before the district pays for a project, the district must submit information regarding the project to ARB to check for outstanding violations and previous project funding.

(A) The district shall email its ARB district liaison the registered owner's name, vehicle identification number, California Highway Patrol number, and the Department of Transportation number or Interstate Commerce Commission number for each vehicle to be replaced in the project as well as all other vehicles in the applicant's fleet. Due to the large number of

vehicles that could require compliance checks, air districts are encouraged to submit these data as soon as possible after receipt of the application.

(B) The liaison will forward that information electronically to the responsible parties at ARB. The liaison will email the air district the results of the compliance check within 10 business days.

(C) If the compliance check indicates that the vehicle has already received funding and is still under contract, the air district will be notified and the application must be rejected.

(D) If the compliance check indicates there is an outstanding violation with any truck in the applicant's fleet, the air district shall inform the engine owner in writing that no disbursement of Carl Moyer Program grant funds may be made until the owner provides proof that each violation has been corrected and each fine has been paid.

3. Participant Requirements

Participants must meet the follow requirements:

(A) Own and Operate: The participant must currently own and operate the old vehicle, documented through a copy of the old vehicle title.

(B) Usage: Participant must submit documentation of the annual gallons consumed or miles traveled for the previous two years to determine cost-effectiveness. Examples of acceptable documentation include: fuel logs, fuel receipts, or maintenance records. Other methods of documenting usage may be considered on a case-by-case basis.

(C) Warranty Requirements: All participants must purchase, at a minimum, a one-year or 100,000 mile major component engine warranty for the replacement vehicle. The warranty must cover parts and labor. It is recommended that the highest grade warranty be purchased in order to avoid expensive repairs in the future. No Carl Moyer Program funds will be issued for maintenance or repairs related to the operation of the vehicle. The participant takes sole responsibility for ensuring that the vehicle is in operational condition throughout the project life.

(D) Insurance: The participant must maintain replacement value insurance coverage for the project life.

(E) Accident Report: If the replacement vehicle is involved in an accident, the participant must report the accident to air district staff within 14 days. The participant must provide a police report of the accident, a letter from the insurance company regarding the accident, and any additional information

requested by the air district. The participant must repair the vehicle and return it to operation, if possible. Down time due to an accident will be credited toward the performance requirements as long as the information is reported as requested and the repairs are made as soon as possible. If the vehicle is totaled, the participant and the air district staff must come to an agreement regarding any requirements that still need to be met.

4. Existing Old Vehicle Requirements

An existing old vehicle, also referred to as the baseline vehicle, must meet the following conditions before funding is awarded to the participant:

(A) Registration: The old vehicle must have been registered in California for the previous twenty-four (24) months. The old vehicle must be based in California.

(B) Two-for-One Replacement: The replacement of two old, like trucks with one replacement truck is eligible for funding, under the following conditions:

(1) All trucks must be the same type of fire apparatus.

(2) Each old truck and the replacement truck must comply with all of the applicable guidelines.

(3) To determine cost-effectiveness, the annual emissions of the two old trucks are determined using emissions factors that correspond to the model year of each truck.

(4) The usage of the two old trucks is summed to establish projected replacement truck usage.

(5) Replacement trucks are eligible for only one grant based on the combined usage; the amount of the grant award is not doubled.

5. Replacement Vehicle Requirements

All replacement vehicles may be either new or used and must meet the following conditions before funding is awarded to the participant:

(A) Engine Certification: New or used replacement vehicles with a 2007 model year or later engine, certified to a particulate matter (PM) emission standard of 0.01 g/bhp-hr and a oxides of nitrogen (NOx) family emission limit (FEL) or NOx standard (STD) level of 1.20 grams per brake horsepower hour (g/bhp-hr) or lower are eligible for funding.

(B) Function: The replacement vehicle must perform the same function as the baseline vehicle.

(C) Used Replacement: A used HHD replacement truck must have less than 500,000 miles and a used MHD replacement truck must have less than 250,000 miles, with odometer verification to occur at the post inspection.

(D) Engine and Emission Control Modifications: Emission controls on the replacement vehicle engine cannot be modified in any manner. Unauthorized modification to engine performance (including changes in horsepower), emission characteristics, engine emission components (not including repairs with like-original equipment manufacturers replacement parts), or any other modifications to the engine's emission control function are not allowed.

6. Air District Requirements

Air districts are responsible for completing a pre-inspection of the old vehicle, post-inspection of the replacement vehicle, and ensuring the destruction of the old vehicle.

(A) Pre-Inspection:

(1) Pre-inspection must include clear photographs of the old vehicle and engine showing the following:

a. Vehicle Identification Number (VIN) label – inside vehicle or on frame rail.
b. Engine – left side.
c. Engine – right side.
d. Engine Serial Number – either label or stamp on block. If the engine label is missing, then the participant must provide verification of the engine make, model, model year, engine serial number, and horsepower from the manufacturer. Verification can include a letter or a printout from an engine manufacturer or dealership. On a case-by-case basis, ARB may approve another means of obtaining the required information.
e. License Plate.

(2) Air districts may allow fire departments to provide documentation that is consistent with the minimum requirements in lieu of a pre-inspection as described in Chapter 3: Program Administration, Section AA.

(B) Post-Inspection: Post-inspection must include clear photographs of the replacement vehicle and engine showing the following:

(1) Same as pre-inspection listed above, Section (A)(1).
(2) Diesel Emission Control Device (if applicable).
(3) Odometer.
(4) Additional modifications (if applicable).

(C) Vehicle Destruction:

(1) Air districts must enter into an agreement with a dismantler.

(2) Carl Moyer funding is not available for the dismantling of the old vehicle.

(3) Upon request of the air district, ARB may approve an alternative disposition for the old vehicle on a case-by-case basis.

(4) Upon request of the dismantler, the air district may approve an extension to the required timeframe for vehicle destruction.

7. Reuse Option

On a case-by-case basis, the truck reuse option is available in lieu of destroying the baseline vehicle, called the first baseline fire truck. The reuse program would allow the first baseline fire truck to replace an even older second baseline fire truck. Minimum requirements for a reuse project include:

(A) Project Criteria: The reuse option is subject to Section C (Project Criteria) requirements listed above.

(B) Emission Reductions: The emission reductions and grant amount are based on the first baseline fire truck covered in the project contract with the fire department that will receive the replacement truck.

(C) Reuse First Baseline Truck: If the contracted fire department chooses to participate in the reuse option, the first baseline fire truck must be transferred to another fire department. The first baseline truck may not be sold, traded, or considered a charitable contribution.

(D) Five Year Difference: The second baseline fire truck must be at least five years older than the first baseline fire truck.

(E) Destruction Requirement: The second baseline fire truck must be destroyed. The air district may allow an extension in the destruction schedule outlined below in the Dismantler Requirements section to provide time for the fire department to find a reuse partner and process a reuse transaction.

8. Dismantler Requirements

These requirements have been established to ensure that emission reductions are real. It prevents the old trucks from being moved into another locale to continue emitting high levels of pollutants. Dismantlers must enter into an agreement with the air district and must meet the following requirements:

(A) Be licensed by the DMV as an auto-dismantler have a current, valid Cal/EPA Hazardous Materials Generators Permit and be in compliance with all local, state and federal laws and regulations.

(B) Destroy the old vehicle and engine within 60 calendar days from receipt.

(C) The old vehicle's engine must be destroyed and rendered useless as specified in Chapter 3: Program Administration.

(D) Cut the frame rails of the old vehicle to ensure that the vehicle will not be used again.

(E) File a "Non-Repairable Vehicle Certificate" with DMV using an "Application for Salvage Certification or Non-Repairable Vehicle Certification".

(F) Take the following photographs and provide to the air district within 10 business days of destroying the vehicle:

(1) Vehicle from left side.
(2) Vehicle from right side.
(3) Vehicle from front.
(4) Vehicle from back.
(5) VIN Tag – inside vehicle or on frame rail.
(6) License Plate.
(7) Odometer Reading.
(8) Cut in frame rails.
(9) Engine – left side.
(10) Engine – right side.
(11) Engine Serial Number – either tag or stamp on block.
(12) Hole in engine block (at least 3 inches wide).

Chapter 7: OFF-ROAD COMPRESSION-IGNITION EQUIPMENT

This chapter describes the minimum criteria and requirements for Carl Moyer Program mobile, self-propelled, off-road compression-ignition (CI) projects such as construction and agricultural equipment. This chapter also describes criteria for non-agricultural portable equipment.

This chapter does not cover portable and stationary agricultural equipment (see Chapter 10). Criteria and requirements for the off-road equipment replacement category can be found in Chapter 9. Air districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

The Air Resources Board (ARB) has adopted in-use fleet rules affecting off-road CI equipment: the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation) and the Cargo Handling Equipment at Ports and Intermodal Rail Yards Regulation (CHE Regulation). Portable engines are regulated under the Portable Airborne Toxic Control Measure (ATCM). There are limited funding opportunities for equipment subject to these rules.

Table 7-1
Summary of Off-Road CI Engine Funding Opportunities

Equipment Type	Subject to ARB Fleet Rule	Moyer Funding Opportunities[1]
Mobile agricultural equipment	No	Funding opportunities exist for engine repowers and retrofits.
Cargo handling equipment at ports/ intermodal rail yards	Cargo Handling Equipment Regulation[2]	Very limited opportunities.
Most other off-road equipment (e.g. construction, mining, rental, airport ground support and other industries)	Off-Road Regulation[3]	Small fleets: Opportunities exist through Dec. 31, 2025, after which fleet must show 100% compliance with the regulation Medium fleets: Opportunities exist through Dec. 31, 2019, after which fleet must show 100% compliance with the regulation Large fleets: Opportunities exist through Dec. 31, 2016, after which fleet must show 100% compliance with the regulation. After Dec. 31, 2012, only filter-based projects eligible for funding
Portable diesel Engines	Portable Engine ATCM[4]	Limited opportunities exist ahead of the fleet average requirements

Limited opportunities means a fleet's compliance status with the ARB regulation must be determined. Contact air district Moyer Program staff or consult fleet rule Carl Moyer Implementation Charts at: https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm in addition to these guidelines.

[2] Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards: http://www.arb.ca.gov/ports/cargo/cargo.htm
[3] Regulation for In-Use Off-Road Diesel-Fueled Fleets http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm
[4] Regulation for Portable engine ATCM: https://ww2.arb.ca.gov/sites/default/files/2020-03/PERP_ATCM_12.5.18R.pdf

Project Types: Taking the above table into consideration, the following categories are eligible projects:

1. Repower of Existing Equipment
2. Retrofit Purchase
3. New Equipment Purchase: Requires case-by-case approval by ARB.
4. Equipment Replacement: Purchases of new or used CI equipment replacing an uncontrolled, fully functional CI piece of equipment may be eligible. For these projects, refer to Chapter 9 or the Off-Road Voucher Incentive Program.

Please see Section D (Project Criteria) for detailed minimum eligibility requirements for all off-road CI project categories.

B. Maximum Eligible Funding Amounts

Table 7-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 7-2
Maximum Percentage Eligible for
Carl Moyer Off-Road Compression-Ignition Projects

Project	Maximum
Tier 1 Repower	75 percent
Tier 2 Repower	80 percent
Tier 3 and Tier 4 Repower	85 percent
Retrofit	100 percent

C. Engine Emission Standards

ARB and the United States Environmental Protection Agency (U.S. EPA) have adopted regulations for exhaust emission standards for new off-road engines and equipment. For reference, Tables 7-3 and 7-4 below summarize the hydrocarbon (HC), oxides of nitrogen (NOx), and particulate matter (PM) standards in grams per brake-horsepower-hour (g/bhp-hr) for Tier 1, 2, 3, and 4 engines. The actual standards, in grams per kilowatt-hour (g/kW-hr), may be found in California Code of Regulations, title 13, sections 2449, et seq.

Table 7-3
ARB and U.S. EPA Tier 1, 2, and 3 Exhaust Emission Standards for New Off-Road Diesel Engines ≥ 25 hp
(g/bhp-hr)

Maximum Rated Power hp (kW)	Tier	Model Year	NOx	HC	NOx+NMHC	PM
25≤hp<50 (19≤kW<37)	Tier 1	1999-2003[a]	—	—	7.1	0.60
	Tier 2	2004-2007	—	—	5.6	0.45
50≤hp<75 (37≤kW<56)	Tier 1	1998-2003[a]	6.9	—	—	—
	Tier 2	2004-2007	—	—	5.6	0.30
	Tier 3[b]	2008-2011	—	—	3.5	0.30
75≤hp<100 (56≤kW<75)	Tier 1	1998-2003[a]	6.9	—	—	—
	Tier 2	2004-2007	—	—	5.6	0.30
	Tier 3	2008-2011	—	—	3.5	0.30
100≤hp<175 (75≤kW<130)	Tier 1	1997-2002[a]	6.9	—	—	—
	Tier 2	2003-2006	—	—	4.9	0.22
	Tier 3	2007-2011	—	—	3.0	0.22
175≤hp<300 (130≤kW<225)	Tier 1	1996-2002	6.9	1.0	—	0.40
	Tier 2	2003-2005	—	—	4.9	0.15
	Tier 3[c]	2006-2010	—	—	3.0	0.15
300≤hp<600 (225≤kW<450)	Tier 1	1996-2000	6.9	1.0	—	0.40
	Tier 2	2001-2005	—	—	4.8	0.15
	Tier 3[c]	2006-2010	—	—	3.0	0.15
600≤hp≤750 (450≤kW≤560)	Tier 1	1996-2001	6.9	1.0	—	0.40
	Tier 2	2002-2005	—	—	4.8	0.15
	Tier 3[c]	2006-2010	—	—	3.0	0.15
hp>750 (kW>560)	Tier 1	2000-2005	6.9	1.0	—	0.40
	Tier 2	2006-2010	—	—	4.8	0.15

[a] EPA model year. ARB model year for Tier 1 starts at 2000 for 25 hp ≤ to <175 hp.

[b] Engine families in this power category may meet the Tier 3 PM standard instead of the Tier 4 interim PM standard in exchange for introducing the final Tier 4 PM standard in 2012.

[c] Caterpillar, Cummins, Detroit Diesel Corporation, and Volvo Truck Corporation agreed to comply with these standards by 2005.

Table 7-4
ARB and U.S. EPA Tier 4 Exhaust Emission Standards for New Off-Road Diesel Engines ≥ 25 hp (g/bhp-hr)

Maximum Rated Power hp (kW)	Tier	Model Year	NOx	HC	NOx+NMHC	PM
25≤hp<50 (19≤kW<37)	Tier 4 Interim	2008-2012	—	—	5.6	0.22
	Tier 4 Final	2013 and later	—	—	3.5	0.02
50≤hp<75 (37≤kW<56)	Tier 4 Interim[(a)]	2008-2012	—	—	3.5	0.22
	Tier 4 Final	2013 and later	—	—	3.5	0.02
75≤hp<100 (56≤kW<75)	Tier 4 Phase-In	2012-2014	0.30	0.14	—	0.01
	Tier 4 Phase-Out		—	—	3.5	0.01
	Tier 4 Alternate NOx[(b)]		2.5	0.14	—	0.01
	Tier 4 Final	2015 and later	0.30	0.14	—	0.01
100≤hp<175 (75≤kW<130)	Tier 4 Phase-In	2012-2014	0.30	0.14	—	0.01
	Tier 4 Phase-Out		—	—	3.0	0.01
	Tier 4 Alternate NOx[(b)]		2.5	0.14	—	0.01
	Tier 4 Final	2015 and later	0.30	0.14	—	0.01
175≤hp<750 (130≤kW<560)	Tier 4 Phase-In	2011-2013	0.30	0.14	—	0.01
	Tier 4 Phase-Out		—	—	3.0	0.01
	Tier 4 Alternate NOx[(b)]		1.5	0.14	—	0.01
	Tier 4 Final	2014 and later	0.30	0.14	—	0.01
hp>750 (kW>560)	Tier 4 Interim	2011-2014	2.6	0.30	—	0.07
	Tier 4 Final	2015 and later	2.6	0.14	—	0.03

(a) Engine families in this power category may meet the Tier 3 PM standard instead of the Tier 4 interim PM standard in exchange for introducing the final Tier 4 PM standard in 2012.

(b) The implementation schedule shown is the three-year alternate NOx approach. Other schedules are available.

D. Project Criteria

The minimum qualifications for off-road compression-ignition projects are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Off-Road CI Equipment Project Criteria

(A) Maximum project life:
(1) Repower only (no retrofit) 7 years
(2) Repower + retrofit 5 years
(3) Retrofit 5 years
(4) Farm equipment* (all projects) 10 years*

*Air districts are required to offer a 10 year project life for farm equipment; however, applicants may request a project life less than 10 years.

A longer project life may be granted case-by-case approval if an applicant provides justifying documentation. The maximum project life does not consider regulatory requirements that may shorten the eligible project life. Regulatory requirements may reduce actual project lives below these maximum values.

(B) Engines greater than 25 horsepower on mobile and portable off-road equipment are eligible for funding.

(C) Air Districts have discretion to use good engineering judgment to determine the project horsepower for an engine based on the engine label, manual, and engine records or other verifiable records. For projects in which the actual engine horsepower cannot be determined based on information listed above the engine horsepower can be estimated by the following formula: Engine hp = Power Take Off hp X 120 percent.

(D) The certification emission standards and Tier designation for the engine must be determined from the Executive Order or U.S. EPA Certificate of Conformity (for federally preempted engines) issued for that engine. ARB Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php.

(E) Engines that are participating in the "Tier 4 Early Introduction Incentive for Engine Manufacturers" program, as detailed in California Code of Regulations, title 13, section 2423(b)(6), are eligible for Carl Moyer Program funding provided that they are certified to the final Tier 4 emission standards. The ARB Executive Order for these engines indicates that the engines are certified under this provision. The emission rates for these engines used to determine cost-effectiveness shall be

equivalent to the emission factors associated with Tier 3 engines. Air districts must retain this documentation in the project file.

(F) Interim Tier 4 engines between 75 and 750 horsepower certified to the Phase-In, Phase-Out, and Alternate NOx standards as detailed in California Code of Regulations, title 13, section 2423(b)(1)(B), are eligible for funding. The appropriate emission factors for calculating emission reductions and cost-effectiveness are listed in Appendix D, Table D-12.

(G) For equipment with baseline engines manufactured under the flexibility provision, detailed in California Code of Regulations, title 13, section 2423(d), baseline emission rates shall be determined by using the previous applicable Tier emission standard for that engine model year and horsepower rating. Alternatively, the baseline emission rates may be determined based upon the standard or Tier associated with the actual reference family listed on the emission control information label of the baseline equipment. The ARB Executive Order for these engines indicates that the engines are certified under the flexibility provision. Air districts must retain this documentation in the project file.

(H) Notwithstanding section D.2.(C), interim Tier 4 (interim Tier 4, Tier 4 Phase-Out, Tier 4 Phase-in/Alternate NOx) and Tier 4 Final engines participating in the averaging, banking and trading program that are certified to family emission limits (FEL) higher than the applicable emission standards are eligible to participate in the Carl Moyer Program. The appropriate emission factor for calculating emission reductions and cost-effectiveness shall be equivalent to the emission factors associated with the Tier 3 for engines 50 to 750 horsepower and Tier 2 for engines less than 50 horsepower or greater than 750 horsepower.

(I) Interim Tier 4 and Tier 4 engines participating in the averaging, banking and trading program that are certified to family emission limits (FEL) below the applicable emission standards are eligible to participate in the Carl Moyer Program. The appropriate emission factor for calculating emission reductions and cost-effectiveness shall be the emission factor associated with the applicable interim Tier 4 (interim Tier 4, Tier 4 Phase-Out, Tier 4 Phase-in/Alternate NOx) or Tier 4 Final emission standard.

(J) New replacement engines manufactured under the "replacement engine" provisions of CCR, Title 13, Section 2423(j) and/or the provisions of 40 CFR 1068.240 are eligible for Carl Moyer Program funding.

(K) The criteria of this chapter are applicable to portable off-road engines that are not covered by the definition of agricultural source under Health and Safety Code section 39011.5. However, portable equipment owned by agricultural service companies, rental companies, public agencies, and

non-agricultural service companies meet the definition of farm equipment per this chapter and are subject to the eligibility criteria outlined in Chapter 10.

(L) Cost-effectiveness calculations must use the hour-based formula as discussed in Appendix C. Fuel usage may only be used with case-by-case approval from ARB. If using the fuel based formula, usage must be based on two years historical fuel usage documentation specific for the equipment being funded. Documentation may include fuel logs, purchase receipts, or ledger entries.

(M) Future annual hours of equipment operation for determining emission reductions must be based upon readings from an installed and fully operational hour meter. If equipment does not have a functioning hour meter at the time of the project, the hour meter must be installed, repaired, and/or replaced. If during the project life the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's cost. If case-by-case approval was provided by ARB to use fuel usage for determining emission reductions, then future annual fuel usage must be based on fuel logs, purchase receipts, or ledger entries specific to the funded equipment.

(N) Project load factors for calculating emission reductions and cost-effectiveness are listed in Appendix D, Table D-10. Load factors shall be selected by first choosing the equipment category (i.e., Airport GSE, Mobile Agriculture, Construction, etc.), then by selecting the equipment type within the category. This is consistent with how the equipment category and load factor inputs are selected in CARL.

2. Repower

A repower is the replacement of the existing engine with a newer emission-certified engine instead of rebuilding the existing engine to its original specifications. These are commonly diesel-to-diesel repowers and significant NOx and PM benefits are achieved due to the higher emission levels of the engine being replaced.

(A) Funding is not available for projects where a spark-ignition engine (i.e., natural gas, gasoline, etc.) is replaced with a diesel engine.

(B) Equipment manufactured under the "Flexibility Provisions for Equipment Manufacturers" as detailed in California Code of Regulations, title 13, section 2423(d), are ineligible for Carl Moyer Program funding as a replacement engine.

(C) Engines eligible for repowers must meet the current applicable standard or Tier. If repowering with an engine meeting the current applicable standard

is technically infeasible, unsafe, or not available when the air district commits to the proposed project, the replacement engine must meet the most practicable previously applicable emission standard. For purposes of this section, air district's commitment to a proposed project shall be consistent with that stated in their policies and procedures manual. The air district shall determine eligibility of a repower project using an engine certified to a previous emission standard using the criteria listed below:

(1) At the applicant's request, confirmation of availability of an engine meeting the most recent emission standards or Tier may be limited to the same manufacturer as the existing engine.

(2) If the air district and the applicant do not execute a contract for the project within six months of project commitment, then the air district must recheck for the availability of engines meeting the current standard.

(3) Documentation that engines meeting the current applicable standards are unavailable must be provided to the air district. Acceptable documentation that engines meeting the most recent emission standards are unavailable include:

a. Verifiable information from the engine manufacturer, engine distributor, and/or engine dealer regarding the unavailability of engines meeting the current emission standards or Tier.

b. Confirmation (a written declaration by the air district is acceptable) that engines from a specific manufacturer meeting the current emission standards or Tier are not certified (Executive Order is not available on ARB website). Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php.

c. A written statement of reason(s) provided by the engine manufacturer verifying that a particular piece of equipment cannot accommodate an engine meeting current standards without major modifications or safety risks. The letter must include information on the equipment being repowered, the engine being replaced, the reason why an engine meeting the currently applicable standard cannot be used (including applicable supporting documentation), and the proposed replacement engine. Air districts must retain the written statement of reasons in the project files.

d. The engine manufacturer has provided ARB with sufficient information on engine and/or equipment models for which repowers are available, and engine and/or equipment models for which repowers are not available or feasible. Engine manufacturers who are interested in pursuing this option should contact ARB. ARB staff will maintain a list

of such engines and/or equipment models and make that list available to air district staff.

(D) Notwithstanding Section D.2.(C), repower to Tier 1 is eligible for funding only in the following cases:

(1) In a fleet meeting the small fleet definition or a fleet meeting the captive attainment area fleet definition of the Off-Road Regulation until January 1, 2016. After this date, Tier 1 engines cannot be installed and are no longer eligible.

(2) Equipment specifically exempted from the performance requirements of the Off-Road Regulation, California Code of Regulations, title 13, section 2449(e).

(3) Equipment that is not subject to the Off-Road Regulation.

(DI) Notwithstanding Section D.2.(C), repower to a Tier 2 is eligible for funding only in the following cases:

(1) In a fleet meeting the large or medium fleet definition of the Off-Road Regulation until January 1, 2018. After this date, Tier 2 engines cannot be installed and are no longer eligible.

(2) In a fleet meeting the small fleet definition or a fleet meeting the captive attainment area fleet definition of the Off-Road Regulation until January 1, 2023. After this date, Tier 2 engines cannot be installed and are no longer eligible.

(3) Equipment specifically exempted from the performance requirements of the Off-Road Regulation, California Code of Regulations, title 13, section 2449(e).

(4) Equipment that is not subject to the Off-Road Regulation.

(DII) For repower plus retrofit projects, the cost of datalogging the replacement engine can be included in the total project cost.

(DIII) If an ARB-verified retrofit is available for the replacement engine at the time an air district reviews the application for eligibility, the applicant must install the highest level verified retrofit, as discussed in Section D.3. (A) of this chapter.

(1) If the additional cost of the retrofit causes the cost-effectiveness to be above the cost-effectiveness limit as defined in Appendix G, then the retrofit is not required.

(2) If documentation can be provided to the air district or ARB that the retrofit is not technically feasible, available, or safe, then the retrofit is not required. Documentation of retrofit unavailability for mobile cargo handling equipment must follow the process set out in the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, California Code of Regulations, title 13, section 2479 (f)(2). Documentation for a retrofit that impairs the safe operation of a vehicle must follow the process set out in the Off-Road Regulation, California Code of Regulations,
title 13, section 2449(e)(8). A determination that a retrofit is not required due to safety concerns must be made prior to the retrofit installation phase of a project.

(3) If offered by an air district, an applicant may opt-out of the default retrofit requirement. Applicants must sign a waiver acknowledging that due to current or future regulations, the applicant may be required to install a retrofit on the funded equipment at their own cost. Air districts have the option to not offer this additional flexibility and are encouraged to evaluate individual projects based on the near-source health impacts. Large fleets subject to the Off-Road Regulation have additional requirements per section E.4.(D) below.

(4) Equipment that has been issued an exemption from retrofit installation from specific manufacturers may be found at: https://ww3.arb.ca.gov/diesel/verdev/vt/cvt.htm.

(H) For repower projects with new off-road compression-ignition engines equipped with original engine manufacturer aftertreatment devices, addition of a retrofit is ineligible due to issues with engine warranty and anti-tampering provisions.

(I) All engines replaced as part of an off-road repower project must be destroyed and rendered useless, in accordance with the requirements of Chapter 3: Program Administration, Section BB.4.

3. Retrofit

Retrofit is the installation of an ARB-verified diesel emission control system on an existing engine. Examples include, but are not limited to, particulate filters and diesel oxidation catalysts. More information on retrofits may be found at http://www.arb.ca.gov/diesel/verdev/verdev.htm.

(A) Retrofit projects that control PM must use the highest level technically feasible technology available for the equipment being retrofitted. ARB considers the retrofit device that achieves the highest level of PM

reductions (Level 3 - 85 percent) and the highest level of NOx reductions to be the highest level retrofit.

(B) The cost of the retrofit, filters, and maintenance of the retrofit device needed during the project life is eligible for incentive funding, provided its inclusion in the project cost still is within the weighted cost-effectiveness limit. The datalogging cost of a retrofit-only project cannot be included in the eligible project cost.

(C) Off-road compression ignition engines equipped with original engine manufacturer aftertreatment devices are ineligible for retrofit funding due to issues with engine warranty and anti-tampering provisions.

4. New Purchase: New purchase of equipment with engines meeting the Blue Sky Standards, certified on-road engines, and electric motors will be considered by the air district and ARB on a case-by-case basis. These projects are seldom technically feasible or practical and very few have been funded up to this time.

E. Projects Subject to the Regulation for In-Use Off-Road Diesel-Fueled Fleets

1. Fleets must be in compliance with the Off-Road Regulation in order to be eligible for and receive funding.

(A) Applicants must submit information regarding fleet size and compliance status. All documentation submitted must be signed and dated by the applicant and include language certifying that the fleet list provided is accurate and complete. Air districts are not required to validate submitted information and will not be held liable if fleet owners falsify fleet information.

(1) The following information must be submitted at the time of application:
   a. The Diesel Off-Road On-line Reporting System (DOORS) ID of the fleet.
   b. The DOORS Equipment Identification Number (EIN) of the funded equipment.
   c. Fleet size information (total horsepower) as reported to DOORS.
      1. Prior to 1/1/2014, large fleets are not required to show compliance with the Off-Road Regulation.
      2. Prior to 1/1/2017, medium fleets are not required to show compliance with the Off-Road Regulation.
      3. Prior to 1/1/2019, small fleets are not required to show compliance with the Off-Road Regulation.

(2) Applicants are not required to submit information on exempted equipment. Information on exempted off-road equipment can be found in the Off-Road Regulation (California Code of Regulations, title 13, § 2449).

2. No emission reductions achieved from a funded project can count towards a fleet's regulatory requirements for the duration of the project life.

3. Eligibility for a project is based on the best available control technology (BACT) requirements of the Regulation for In-Use Off-Road Diesel-Fueled Fleets.

   (A) Any equipment funded through the Moyer program and that is still under contract must be deducted from the amount of equipment eligible for funding. For instance, a fleet that is eligible for funding to reduce emissions for 50 percent of its horsepower, but that has already received funding in previous years to reduce emissions from 20 percent of its horsepower, is only eligible for funding to reduce emissions from 30 percent of its horsepower.

   (B) Equipment funded through the Moyer program must be included in the fleet's total horsepower from which the BACT requirements of the regulation are calculated.

4. Large Fleets

   (A) Eligible projects for large fleets, as defined in the Off-Road Regulation must provide at least 3 years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least 3 years.

   (B) Projects must be installed and in operation at least 3 years before the BACT requirements become effective for the funded equipment.

   (C) The first compliance date for large fleets in the Off-Road Regulation is January 1, 2014. The final compliance date is January 1, 2023. Funding for large fleets is available through December 31, 2016.

   (D) Eligible projects for large fleets must include a particulate matter filter beginning January 1, 2013, for engines 75 horsepower and greater and January 1, 2014, for engines less than 75 horsepower. The retrofit waiver option in section D.2.(G)(3) is no longer available to projects involving large fleets after the dates specified above.

      (1) Eligibility shall be determined at the time the air district commits to the proposed project. For purposes of this section, an air district's commitment to a project shall be consistent with that stated in its policies and procedures.

      (2) If the air district and the applicant do not have an executed contract within six months of project commitment, then the project must include a particulate matter filter in order to be eligible. Alternatively, engines which

are certified to the Tier 4 final particulate matter standard or which are certified to an FEL at or below the Tier 4 final particulate matter standard numerical level remain eligible after the dates in E.4.(D) above.

(E) Large fleets may have additional requirements per subsection E.7. below.

5. Medium Fleets

(A) Eligible projects for medium fleets, as defined in the Off-Road Regulation, must provide at least 3 years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least 3 years.

(B) Projects must be installed and in operation at least 3 years before the BACT requirements become effective for the funded equipment.

(C) The first compliance date for medium fleets, as defined in the Off-Road Regulation, is January 1, 2017. The final compliance date is January 1, 2023. Funding for these fleets is available through December 31, 2019.

6. Small Fleets (includes Captive Attainment Area Fleets)

(A) Eligible projects for small fleets, as defined in the Off-Road Regulation, must provide at least 2 years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least 2 years.

(B) Projects must be installed and in operation at least 2 years before the BACT requirements become effective for the funded equipment.

(C) The first compliance date for small fleets, as defined in the Off-Road Regulation, is January 1, 2019. The final compliance date is January 1, 2028. Funding for these fleets is available through December 31, 2025.

7. Surplus Off-Road Opt-In for NOx (SOON) Program

(A) Fleets located in air districts that have opted into the SOON program and that are subject to the SOON provisions, are eligible for funding in accordance with the Off-Road Regulation (California Code of Regulations, title 13, §2449.2) and must meet the applicable criteria in section A, B, C, and or D above.

(B) Projects funded under SOON are not subject to Section E of this chapter, except for the requirements of this subsection E.7.

8. For more information on eligibility of off-road diesel equipment, please see the Regulation for In-Use Off-Road Diesel-Fueled Fleets Carl Moyer Program Implementation Chart available at https://ww3.arb.ca.gov/msprog/moyer/guidelines/2017gl/supplemental/final_combined_green_charts_20180208.pdf.

F. Projects Subject to the Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards

1. Eligible projects must provide at least 3 years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least 3 years. Much of the applicable cargo handling equipment must already be in compliance with the regulation. Therefore, very limited funding opportunities exist.

2. For more information on eligibility of cargo handling equipment, please see the Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards Carl Moyer Program Implementation Chart available at https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm.

G. Projects Subject to the Portable Engine ATCM

1. Portable engines under this chapter are subject to the Portable Engine ATCM and must be surplus to the Portable Engine ATCM in order to be eligible. Funding is available for achieving reductions required by the regulation at least three years prior to regulatory compliance deadlines and for reductions not required by the regulation. The first compliance deadline for engines subject to the Portable Engine ATCM was January 1, 2010; therefore only limited funding opportunities exist for projects in advance of the fleet average compliance deadlines specified in the regulation.

2. Diesel engines regulated under the Portable Engine ATCM must be registered (or permitted) in an air district to be eligible for repower project unless documentation from the air district is included in the project file stating that a registration (or permit) is not required to operate in their district.

3. Uncontrolled engines subject to the Portable Engine ATCM are not eligible for repowers.

4. An existing Tier 1 or Tier 2 engine subject to the Portable Engine ATCM and subject to SBx2_3 may use a 10 year project life and may be eligible for funding up to the compliance date of an applicable in-use rule.

5. Portable equipment with a Tier 2 engine repowered with a Tier 3 engine must also be equipped with a verified retrofit in order to be eligible for funding.

6. Retrofit projects for engines regulated under the Portable Engine ATCM that control particulate matter (PM) must use the highest level technically feasible

technology available for the equipment being retrofitted. ARB considers the retrofit device that achieves the highest level of PM reductions (level 3 – 85 percent) and the highest level of NOx reductions to be the highest level retrofit.

7. For more information on eligibility of engines used in portable equipment, please see the Portable Engine Airborne Toxic Control Measure Implementation Chart available at: https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm

H. Projects Subject to the Statewide Truck and Bus Regulation

This regulation impacts the eligibility of all on-road heavy-duty diesel-fueled and alternative diesel-fueled vehicles operated in California with a manufacturer's gross vehicle weight rating greater than 14,000 pounds. Although this regulation primarily affects vehicles with on-road engines, some vehicles with off-road engines are also covered. Any application for Carl Moyer Program funding to replace a vehicle with an off-road engine that is subject to an on-road regulation must comply with the applicable surplus requirements described in Chapter 4. For example, a yard truck with an
off-road engine that is subject to the Statewide Truck and Bus Regulation (including yard trucks used primarily in agricultural operations) must meet the applicable on-road surplus requirements described in Chapter 4, Section E, and must also comply with all off-road project criteria described in this chapter.

Chapter 8: OFF-ROAD LARGE-SPARK IGNITION EQUIPMENT

This chapter describes the minimum criteria and requirements for Carl Moyer Program off-road large spark-ignition engine (LSI) projects. Criteria and requirements for the off-road equipment replacement category can be found in Chapter 9. Air districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

The Air Resources Board (ARB) has adopted in-use LSI Engine Fleet Requirements (LSI Fleet Rule). There are limited funding opportunities for equipment subject to this rule.

Table 8-1
Summary of Off-Road LSI Equipment Funding Opportunities

Equipment Type	Subject to ARB Fleet Rule	Moyer Funding Opportunities[1]
Forklifts, sweeper/ scrubbers, industrial tow tractors, airport ground support equipment (GSE)	LSI Engine Fleet Requirements[2]	Small fleets: Not limited by regulation. Large/Medium fleets: Very limited opportunities.
Agricultural crop preparation services (forklifts only)	LSI Engine Fleet Requirements[2]	Pre-1990 model year forklifts: Not limited by regulation. 1990 and later model year forklifts: Very limited opportunities.
All other equipment (e.g., aerial lifts, construction, mining, other industrial)	No	Not limited by regulation.

[1] Limited opportunities mean a fleet's compliance status with the ARB regulation must be determined. Contact air district Moyer Program staff or consult fleet rule Carl Moyer Implementation Charts at: http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm in addition to these guidelines.

[2] Large Spark Ignition (LSI) Engine Fleet Requirements: http://www.arb.ca.gov/msprog/offroad/orspark/orspark.htm

Project Types:

1. Equipment Replacement: Purchases of new or used LSI equipment replacing a fully functional LSI piece of equipment may be eligible. For these projects, refer to Chapter 9.
2. Retrofit Purchase.
3. New Electric Purchase.
4. Other Project Types: New purchases of LSI equipment certified to optional low-emission standards and repowers with cleaner engines have not been typical LSI projects, but may be funded on a case-by-case basis only with prior ARB approval.

Please see Section D (Project Criteria) for detailed minimum eligibility requirements for all off-road LSI project categories.

B. Maximum Eligible Funding Amounts

Table 8-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 8-2
Maximum Percentage Eligible for
Carl Moyer Off-Road Large Spark-Ignition Engine Projects

Project	Maximum
New Electric Equipment Purchase	30 percent
Retrofit	100 percent

C. Engine Emission Standards

New and in-use standards have substantially reduced emissions for large spark-ignition equipment over time. ARB and United States Environmental Protection Agency
(U.S. EPA) have adopted regulations for exhaust emission standards for new off-road LSI engines and equipment. These engine exhaust emission standards are summarized in Table 8-3. The project criteria in Section D detail the availability of funding for engines manufactured under these provisions.

Table 8-3
Exhaust Emission Standards for
New Off-Road LSI Engines >1.0 liter
grams per brake horsepower-hour (g/bhp-hr)

Model Year	NOx+ Non-Methane Hydrocarbons (NMHC)
2001-2006[1]	5.0
2007-2009	2.0
2010 and later	0.6

[1] Standards phased in from 2001 – 2004

LSI Fleet Rule: This regulation established fleet-average hydrocarbons plus oxides of nitrogen (HC + NOx) emission requirements, which become more stringent over time. The compliance dates shown in Table 8-4 below, with the fleet average requirements, are for the impacted fleets of forklift equipment, sweepers/scrubbers, industrial tow tractors, and/or pieces of airport ground support equipment.

Table 8-4

Fleet Average Emission Level Requirement
(g/bhp-hr HC + NOx)

Fleet Type	Compliance Date	Compliance Date	Compliance Date
	1/1/2009	1/1/2011	1/1/2013
Large Forklift Fleet (26+)	2.4	1.7	1.1
Medium Forklift Fleet (4-25)	2.6	2.0	1.4
Non-forklift Fleet	3.0	2.7	2.5

D. Project Criteria

The minimum qualifications for off-road large spark-ignition projects are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Off-Road LSI Equipment Project Criteria

(A) Maximum project life:	
(1) New electric purchase	10 years
(2) Retrofit	5 years
(3) Farm equipment* (all projects)	10 years*

*Air districts are required to offer a 10 year project life for farm equipment; however, applicants may request a project life less than 10 years.

A longer project life may be granted case-by-case approval by ARB if an applicant provides justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter. Regulatory requirements may reduce actual project lives below these maximum values.

(B) LSI equipment with propulsion engines greater than 25 horsepower (hp) and electric equipment that is greater than 19 kilowatts (kW) are eligible for funding.

(C) LSI equipment with an engine displacement of less than or equal to one liter may be eligible for funding on a case-by-case basis only with prior ARB approval.

(D) Auxiliary engines on mobile equipment and portable engines may be eligible on a case-by-case basis with prior ARB approval.

(E) The following industries are not eligible for funding under this chapter: food retail stores, cold storage, and confined space operations (such as freezers).

(F) Project emission reductions must be based upon readings from an installed and fully operational hour meter. If equipment does not have a functioning hour meter at the time of the project, the hour meter must be installed, repaired and/or replaced. If during the project life the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's cost.

(G) Projects that include leased-to-own equipment are eligible provided the signed contract with the air district specifies that the applicant will keep and use the equipment for the entire project life.

(H) The certification emission standard for the engine must be determined from the Executive Order or U.S. EPA Certificate of Conformity (for federally preempted engines) issued for that engine. ARB Executive Orders for off-road engines may be found at: http://www.arb.ca.gov/msprog/offroad/cert/cert.php?eng_id=LSIE

(I) Case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements as described in Chapter 3, Program Administration.

2. Retrofits

Retrofit is the installation of a verified emission control system on an existing engine. For LSI equipment, this generally involves the addition of a stoichiometric air/fuel controller and a three-way catalyst. Information on LSI verified retrofit systems may be found at:

(A) For forklifts only, Classes 4, 5, and 6, are eligible for retrofit project funding.

(B) The retrofit kit must be verified by ARB to the highest level available for the engine being retrofitted.

(C) Eligible costs include purchase and installation of a verified retrofit kit and an hour meter if none exists on the equipment.

3. New Purchase

(A) Electric Equipment

(1) Electric forklift equipment that is less than 19 kW may be eligible for funding if manufacturer documentation (e.g., manufacturer specification sheet) is submitted verifying that electric forklift capacity is equal to or

greater than 3,000 pounds. This verification documentation must be included in the project file.

(2) Electric equipment other than forklifts that are rated less than 19 kW may be eligible on a case-by-case basis with prior ARB approval. Documentation must be provided indicating that work performed is equivalent to a 25 hp LSI engine.

(3) For forklifts only, new electric forklift purchases of Class 1, lift codes 4, 5, or 6 are eligible.

(4) For eligible projects, applicants must sign a declaration that old electric equipment is not being replaced with new electric equipment, and the applicant would not normally purchase electric equipment.

(5) Eligible projects must include evidence of a plan to install either the number of battery chargers corresponding to the number of pieces of equipment purchased or fast charging units for use with multiple pieces of equipment.

(6) Costs for battery chargers and necessary peripheral equipment associated with electric equipment projects may be included in the determination of the grant award amount. These costs are considered infrastructure and can only be funded with air district match funds.

(7) Purchase of new zero-emission equipment other than electric is eligible on a case-by-case basis only with prior ARB approval (e.g., fuel cell equipment).

(B) LSI Equipment

Current LSI regulations allow manufacturers to certify engines to optional standards that are below the required emission standards. New LSI engines may certify to optional emission standards as low as 0.10 g/bhp-hr HC+NOx. It is likely, due to market demand driven by current regulations, that the price differential between equipment certified to the standard and equipment certified to the optional standard may be rather small. As such, new LSI equipment certified to the optional standard and at least 30 percent below the current applicable emission standard may be eligible on a case-by-case basis only with prior ARB approval.

4. Repower: A repower is the replacement of the in-use engine with an emission-certified engine instead of rebuilding the existing engine to its original specifications. Repowers in LSI equipment are not typical due to the relatively low value of the equipment by the time an engine repower is needed. Repowers

of forklifts and other LSI equipment can be considered on a case-by-case basis only with prior ARB approval.

5. Projects Subject to the Off-Road Large Spark-Ignition Engine Fleet Requirement

The LSI Fleet Rule requires reductions in fleet average HC+NOx emissions. The fleet size is determined by aggregating an operator's equipment in the State of California. The regulation impacts owners of fleets of four or more LSI forklifts and/or four or more LSI sweepers/scrubbers, industrial tow tractors, and/or pieces of airport ground support equipment.

(A) Eligible funding must provide at least three years of surplus emission reductions to the LSI fleet regulation, with a corresponding minimum project life of at least three years.

(B) Carl Moyer Program funded projects may not be used to delay compliance and will receive no credit towards an in-use regulation.

(C) Large and Medium Forklift Fleets and Fleets of Four or More Sweeper/Scrubbers, Ground Support Equipment, and/or Industrial Tow Tractors: In order to be eligible for funding, large and medium forklift fleets and fleets of four or more non-forklift LSI equipment must meet the final fleet average emission level applicable on January 1, 2013.

(D) Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer: These fleets are required to either retrofit, repower, or replace 100 percent of their fleet by January 1, 2012, or currently meet a 3.0 g/bhp-hr fleet average HC + NOx level. Fleets that have met the 3.0 g/bhp-hr fleet average can apply for funding. Additionally, in accordance with SBx2 3, fleets that have retrofitted/repowered 20 percent of their fleet in compliance with the regulation are eligible for funding up to the final compliance date. In order to be eligible, these projects must be under executed contract and must be installed and in operation prior to the applicable compliance date.

(E) LSI fleets that have achieved compliance with the final regulatory deadline are eligible for funding.

(F) Due to the regulatory requirements for rental and lease equipment subject to the LSI Fleet Rule, projects that include rented or leased equipment are not eligible.

(G) Fleets with equipment not subject to the LSI Fleet Rule are eligible for funding, including:

(1) Agricultural crop preparation non-forklift equipment and pre-1990 forklifts.

(2) Forklifts used exclusively in fields to harvest and maintain crops.

(3) Non-forklift LSI equipment such as aerial lifts, lawn and garden tractors, commercial turf equipment, mining and construction equipment, and industrial equipment.

(4) Small fleets (one to three forklifts and/or one to three sweepers/ scrubbers, industrial tow tractors, or pieces of airport GSE).

6. Required Off-Road LSI Fleet Information: For forklifts, sweeper/scrubbers, GSE, and/or Industrial Tow Tractors, an applicant's fleet size impacts project eligibility. The following basic information is needed from the applicant for all equipment subject to the regulation in order to demonstrate fleet size. All documentation submitted must be signed and dated by the applicant and include language certifying that the fleet list provided is accurate and complete.

   (A) Large/Medium/Non-Forklift Fleets: For large, medium, and non-forklift fleets subject to the LSI Fleet Rule, applicants will need to provide the compliance records for the entire statewide fleet as described in the regulatory language (California Code of Regulations, title 13, § 2775.2). The required fleet information includes:

   (1) Equipment type (e.g., forklift, GSE, etc.)
   (2) Make of engine and equipment
   (3) Model of engine and equipment
   (4) Serial number of engine and equipment
   (5) Engine emission certification standard or retrofit verification level (include Emission Control Group name)

   (B) Small Fleets: Small fleets are not required to maintain compliance records, but for the purposes of determining project eligibility, air districts must obtain the following information for the entire statewide fleet:

   (1) Equipment identification number (vehicle identification number, fleet assigned identification, etc.)
   (2) Equipment type (e.g., forklift, GSE, etc.)

7. Applicants are not required to submit information on exempted equipment (except as noted above for small fleets). Information on exempted LSI equipment can be found in California Code of Regulations, title 13, sections 2775(b), 2775.1(c) (4), and 2775.1(d-f) of the Final Regulation Order (http://www.arb.ca.gov/regact/lore2006/oalapprovedfro.pdf).

Chapter 9: OFF-ROAD EQUIPMENT REPLACEMENT

This chapter describes the minimum criteria and requirements for Carl Moyer Program mobile, self-propelled off-road compression-ignition (CI) and large spark-ignition (LSI) equipment replacement projects. Air districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

All provisions regarding the in-use regulations described in Chapters 7 and 8: Off-Road Compression-Ignition Equipment and Off-Road Large Spark-Ignition Equipment also apply in this chapter.

Equipment replacement provides incentives to replace old high-polluting off-road equipment with newer, lower-emission replacement equipment, providing real emission benefits earlier than would have been expected through normal attrition.

Please see Section C (Project Criteria) for detailed minimum eligibility requirements.

The following off-road equipment replacement projects may be eligible for funding. Note: The existing old equipment engine must be an uncontrolled, Tier 1, or Tier 2 engine.

1. New Replacement Equipment Purchase: The purchase of new equipment with an engine certified to the current emission standard or Tier to replace existing equipment that is to be scrapped.

2. Used Replacement Equipment Purchase: The purchase of used equipment with an engine certified to the current emission standard or Tier to replace existing equipment that is to be scrapped.

B. Maximum Eligible Funding Amounts

Table 9-1 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 9-1
Maximum Percentage Eligible for
Carl Moyer Off-Road Equipment Replacement Projects

Project	Maximum
New or Used Equipment Purchase	80 percent of total equipment purchase costs
Retrofit	100 percent

C. Project Criteria

The minimum qualifications for off-road equipment replacement projects are listed below. All projects must also conform to the requirements in Chapter 2: General

Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Criteria

(A) Funding is available for replacement of existing equipment utilizing the following engines:

(1) Large spark ignited engines larger than or equal to 19 kilowatts (kW) (25 horsepower (hp)). Engines above 25 hp but with a displacement of less than or equal to one liter may be eligible for funding on a case-by-case basis.

(2) Diesel engines larger than or equal to 25 hp.

(B) Projects involving replacement with an electric forklift are eligible for a maximum of 80 percent of total equipment purchase costs. In addition, the cost of the recharging station and corresponding installation for the funded electric forklift is an eligible cost but must be included in the cost-effectiveness calculation. The combined cost-effectiveness of the electric forklift, recharging station, and corresponding installation must be below the cost-effectiveness limit as defined in Appendix G.

(C) Project Life

(1) The maximum project life for all off-road non-farm CI equipment replacement projects is five years with the following exceptions:

a. Three years: excavators, skid steer loaders, and rough terrain forklifts as defined in Appendix B: Definitions.

b. Seven years: crawler tractors, off-highway tractors, rubber tired dozers, and workover rigs as defined in Appendix B: Definitions.

(2) The maximum project life for all off-road non-farm LSI equipment replacement projects is three years.

(3) The maximum project life for all off-road farm equipment replacement projects is 10 years. Air districts must offer a 10 year project life for farm equipment; however, applicants may request a project life less than 10 years.

(4) The maximum project life for the replacement of an LSI forklift with a zero emission forklift is 10 years. Senate Bill 467 allows these projects to incorporate the remaining life of the equipment being scrapped (three years) and the median useful life of the equipment the applicant would

have bought at the time of normal attrition (seven years). Emission benefits from two separate transactions may be included in the cost-effectiveness calculations:

a. Emission reductions from existing uncontrolled, Tier 1, or Tier 2 equipment, as applicable, to zero emission equipment.

b. Emission reductions from a new piece of equipment meeting the emission standards at the time of purchase to zero emission.

(5) A longer project life may be granted case-by-case approval if an applicant provides justifying documentation. The maximum project life does not consider regulatory requirements which may reduce actual project life below these maximum values.

(D) Equipment must be maintained in accordance with manufacturer specifications.

(E) Equipment may be purchased through an equipment dealer or a private party provided all required documentation is submitted, and the equipment meets all the requirements of the program.

(F) The replacement of two (or more) pieces of old, like equipment with one piece of replacement equipment is eligible for funding. Each piece of old existing and replacement equipment must comply with all of the appropriate criteria below. The replacement equipment must execute the same job as the old pieces of equipment. For baseline emissions calculation, the annual emissions of the two pieces of old equipment are summed. For the replacement equipment emissions calculation, the annual usage of the two pieces of old equipment is summed for the replacement equipment usage.

(1) The horsepower rating for the replacement equipment must not be greater than 125 percent of the original manufacturer rated horsepower (baseline horsepower) for the lowest horsepower of the existing equipment engine. For air districts that allow equipment with horsepower greater than 125 percent to be funded, the applicant must pay the additional costs associated with the higher horsepower equipment, the emission reduction calculation must be based upon the funded (higher horsepower) equipment and documentation must be included in the project file as described in section C.3.(D)(1) of this chapter.

2. Existing (Old) Equipment Requirements

All existing equipment must meet the following conditions:

(A) The old equipment must have an uncontrolled, Tier 1, or Tier 2 engine. (For LSI, this equates to a model year 2009 or earlier engine).

(B) For old equipment with engines manufactured under the flexibility provision detailed in California Code of Regulations, title 13, section 2423(d), baseline emission rates shall be determined by using the previous applicable Tier emission standard for that engine model year and horsepower rating. Alternatively, the baseline emission rates may be determined based upon the standard or Tier associated with the actual reference engine family listed on the emission control information label of the baseline equipment. The Air Resources Board (ARB) Executive Order for these engines indicates that the engines are certified under the flexibility provision. Air districts must retain this documentation in the project file.

(C) For old equipment in which the actual engine horsepower cannot be determined based upon the engine label, manual, and engine records, the engine horsepower can be estimated by the following formula: Engine horsepower = Power Take Off (PTO) x 120 percent.

(D) The old equipment must be registered in the Diesel Off-road On-line Reporting System (DOORS) if it is subject to the Regulation for In-Use Off-Road Diesel-Fueled Fleets (Off-Road Regulation).

(E) Equipment Ownership - The participant must have owned and operated the old equipment in California for the previous two years. The participant must be able to provide documentation of the following specific to the existing (old) equipment:

(1) Bill of sale for the old equipment, and

(2) Two years of documentation for at least one item from the list below. If a bill of sale cannot be provided, two items from the following list may be submitted in substitution:

a. Tax depreciation logs
b. Property tax records
c. Equipment insurance records
d. Bank appraisals for equipment
e. Maintenance/service records
f. General ledgers
g. Fuel records specific to the old equipment (To be used as evidence of California residency the fuel records must also identify the equipment owner)
h. Other documentation approved by ARB

(F) Annual Usage Requirement and Operational Requirement: The old equipment must be in operational condition to qualify for funding. To verify the operational status of the equipment the air district must conduct a pre-inspection of the old equipment prior to funding.

(1) If the participant provides at least two years previous usage documentation, as described below, to the air district as part of the application process, air districts may exclude the usage requirement in the project contract with the participant (per Chapter 3, Program Administration, section Z. 6.). The following types of documents are acceptable to demonstrate usage:

a. Hour meter reading log collected at minimum of once per year from an installed and fully functioning hour meter or historical fuel usage documentation specific for the old equipment. Documentation must include fuel logs, purchase receipts, or ledger entries.
-or-

b. At least two items from the following list proving old equipment is being used by the fleet:

1. Revenue and usage records that identify operational, standby, and down hours for the equipment
2. Employee timesheets linked to specific equipment use
3. Preventative maintenance records tied to specific hours of equipment use
4. Repair work orders specific to the equipment
5. Six months of tracking normal equipment usage with a functional, tamper proof hour meter with prior air district approval
6. Other documentation approved by ARB

(2) If two years of usage documentation as required in (1) above is not available, the annual usage used to determine project cost effectiveness must be included in the project contract (per Chapter 3 Program Administration, section Z. 6.). In addition, the participant must provide documentation to demonstrate that the equipment was operational for the previous year. The following types of documents are acceptable to demonstrate that equipment is operational:

a. Maintenance/service records
b. Revenue and usage records that identify operational, standby, and down hours for the equipment
c. Routine inspections which document the operating condition of the old equipment (Occupational Safety and Health Administration or workplace required)
d. Other documents approved by ARB

3. Replacement Equipment Requirements

All replacement equipment must meet the following conditions:

(A) The new or used replacement equipment must have an engine meeting the most recent California emission standard (e.g., the current Tier). If a specific piece of equipment cannot be purchased and delivered with an engine meeting the most recent emission standard or Tier within six months from the time the air district commits to the proposed project, then equipment with an engine meeting the previous emission standard or Tier may be purchased. For purposes of this section, an air district's commitment to a proposed project shall be consistent with that stated in their equipment replacement plan and/or their policies and procedures.

(1) At an air district's discretion, an air district may check availability of equipment with a current Tier engine at the dealers located within the geographical boundaries of the air district. If equipment with a current Tier engine is not available at those dealers, equipment with the previous applicable Tier engine may be purchased. An air district without equipment dealerships located within its boundaries may check availability of equipment with current Tier engines at the dealership or equipment manufacturer nearest to the applicant.

(2) At the applicant's request, confirmation of availability of equipment meeting the most recent emission standards or Tier may be limited to the same equipment manufacturer as the existing (old) equipment or engine.

(3) If the air district and the applicant do not have an executed contract within six months of project commitment, then the air district must recheck for the availability of equipment with the most recent emission standard or Tier.

(4) Documentation that equipment with an engine meeting the most recent emission standard or Tier is unavailable must be provided to the air district. Acceptable documentation that equipment with an engine meeting the most recent emission standard in unavailable include:

a. Verifiable information from the equipment manufacturer, engine manufacturer, distributor and/or dealer regarding the unavailability of equipment with an engine meeting the current emission standard or Tier.

b. Confirmation (a written declaration by the air district is acceptable) that engines from a specific manufacturer meeting the current emission standard or Tier are not certified (Executive Order is not available on

ARB website). Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php.

(5) Interim Tier 4 (interim Tier 4, Tier 4 Phase-Out, Tier 4 Phase-In/Alternate NOx) and Tier 4 Final engines participating in the averaging, banking, and trading program that are certified to family emission limits (FELs) higher than the applicable emission standards, as designated on ARB's Executive Order, are eligible to participate in the Carl Moyer Program. The appropriate emission factor for calculating emission reductions and cost effectiveness shall be equivalent to the emission factors associated with the Tier 3 for engines 50 to 750 horsepower and Tier 2 for engines less than 50 horsepower or greater than 750 horsepower.

(6) Interim Tier 4 and Tier 4 engines participating in the averaging, banking, and trading program that are certified to FEL below the applicable emission standards, as designated on ARB's Executive Order, are eligible to participate in the Carl Moyer Program. The appropriate emission factor for calculating emission reductions and cost effectiveness shall be the emission factors associated with the applicable interim Tier 4 (interim Tier 4, Tier 4 Phase-Out, Tier 4 Phase-in/Alternate NOx) or Tier 4 Final emission standard.

(7) For CI equipment, engines that are participating in the "Tier 4 Early Introduction Incentive for Engine Manufacturers" program, as detailed in California Code of Regulations, title 13, section 2423(b)(6), are eligible for Carl Moyer Program funding provided that they are certified to the final Tier 4 emission standards. The ARB Executive Order for these engines indicates that the engines are certified under this provision. The emission rates for these engines used to determine cost-effectiveness shall be equivalent to the emission factors associated with Tier 3 engines. Air districts must retain this documentation in the project file.

(8) Interim Tier 4 CI engines between 75 and 750 hp, certified to the Phase-In, Phase-Out, and Alternate NOx standards as detailed in California Code of Regulations, title 13, section 2423(b)(1)(B), are eligible for funding. The appropriate emission factor when calculating emission reductions and cost effectiveness are listed in Appendix D, Table D-12.

(9) Equipment manufactured under the "Flexibility Provisions for Equipment Manufacturers", as detailed in California Code of Regulations, title 13, section 2423(d) are eligible for Carl Moyer Program funding as replacement equipment, provided the equipment meets the Tier 3 or cleaner level. Eligible equipment produced under the flexibility provisions whose reference engine family is certified to an FEL are also subject to the provisions of section (4) or (5) above. Equipment manufactured under the "Flexibility Provisions for Equipment Manufacturers," with an engine

whose reference engine family meets a standard, Tier or FEL less stringent than Tier 3 standard (or Tier 2 standard for engines less than 50 horsepower or greater than 750 horsepower), are ineligible for funding.

(10) The certification emission standard and/or Tier designation for the engine must be determined from the Executive Order or United States Environmental Protection Agency Certificate of Conformity (for federally preempted engines) issued for that engine. ARB Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php

(B) The replacement equipment must serve the same function and perform the same work equivalent as the old equipment (e.g., replacement of an agricultural tractor with another agricultural tractor).

(C) Only the minimum attachments normally sold with the original equipment, as determined by the air district, are eligible for reimbursement on the replacement equipment.

(D) Air districts have discretion to use good engineering judgment to determine project horsepower for an engine or equipment based on the engine label, manual, engine records, or other verifiable records.

(E) The hp rating for the replacement equipment engine must not be greater than 125 percent of the original manufacturer rated hp (baseline hp) for the old (existing) equipment engine. In limited situations, such as where equipment in the original hp range is not available or the higher hp equipment will result in equal or less annual emissions, the air district may approve a greater than 25 percent increase in hp. Documentation must be provided that the replacement equipment will serve the same function as the old equipment.

(1) Alternatively, at an air district's discretion, equipment may be funded with horsepower greater than 125% of existing equipment. However, the eligible funding amount must be based upon equipment whose horsepower is no higher than 125% of the old equipment horsepower. The applicant is required to pay the additional equipment costs associated with the higher horsepower equipment. The emission reduction calculations shall be based upon the funded (higher horsepower) equipment. Air districts that choose to fund higher horsepower equipment must document in the project file the equipment cost of the funded (higher horsepower) equipment as well as the method used to determine the basis for the project grant amount (e.g. dealership cost estimate of lower horsepower equipment).

(F) Warranty Requirements

(1) All purchasers of equipment must purchase a one-year or 1600 hour power and drive train warranty for the new or used replacement equipment. The warranty must cover parts and labor. If the purchase of new or used replacement equipment already includes a minimum one-year or 1,600 hour warranty as specified above, a separate supplemental warranty is not required. However, it is recommended that the highest grade warranty be purchased in order to avoid expensive repairs in the future. Warranty documentation must be provided to the air district. Warranty costs are not eligible for funding.

(G) No funds will be issued for maintenance or repairs related to the operation of the equipment. The participant takes sole responsibility for ensuring that the equipment is in operational condition throughout the agreement period.

(H) For CI equipment, an ARB verified diesel emission control system (or retrofit) is required on all replacement equipment if available. Retrofit projects that control particulate matter (PM) must use the highest level technically feasible technology available for the equipment being retrofitted.

(1) The cost of the retrofit, filters, and maintenance of the retrofit device needed during the project life is eligible for incentive funding, provided its inclusion in the project cost still meets the weighted cost-effectiveness limit.

(2) The retrofit must be installed prior to equipment delivery to the participant and must stay in operation on the replacement equipment for the project life.

(3) If the additional cost of the retrofit causes the cost-effectiveness to be above the cost-effectiveness limit as defined in Appendix G, then the retrofit is not required.

(4) If documentation can be provided to the air district and ARB that a retrofit is not technically feasible, available, or safe, then the retrofit is not required. Documentation of retrofit unavailability for mobile cargo handling equipment must follow the process set out in the Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards, California Code of Regulations, title 13, section 2479 (f) (2). Documentation for a retrofit that impairs the safe operation of a vehicle must follow the process set out in the Regulation for In-Use Off-Road Diesel-Fueled Fleets, California Code of Regulations, title 13, section 2449(e)(8). A

determination that a retrofit is not required due to safety concerns must be made prior to retrofit installation phase of a project.

(5) Availability of an ARB-verified retrofit for the replacement equipment must be determined at the time the air district commits to a proposed project. For purposes of this section, air district's commitment to a proposed project shall be consistent with that stated in their equipment replacement plan and/or their policies and procedures.

a. If the air district and the applicant do not have an executed a contract within six months of project commitment, then the air district must recheck for the availability of an ARB-verified retrofit.

b. Documentation that an ARB-verified retrofit is unavailable must be provided to the air district. Acceptable documentation of retrofit unavailability include:

1. Verifiable information from the retrofit manufacturer, retrofit distributor and/or dealer regarding the unavailability of verified retrofits.

2. Confirmation (a written declaration by the air district is acceptable) that no retrofit has been ARB-verified for the engine (the Executive Order is not available on ARB website).

(6) If offered by an air district, an applicant may opt out of the default retrofit requirement. Applicants must sign a waiver acknowledging that due to current or future regulations they may be required to install a retrofit on the funded equipment at their own cost. Air districts have the option to not offer this additional flexibility and are encouraged to evaluate individual projects based on the near source health impacts. Large fleets subject to the Off-Road Regulation have additional requirements per section 7.(E)(4) below.

(7) Equipment that has been issued an exemption from retrofit installation from a specific manufacturer may be found at: http://www.arb.ca.gov/msprog/moyer/retrofit/exemptions.htm

(8) Additional information on retrofit systems is included in Appendix E: Description of Certification and Verification and on ARB's website at http://ww3.arb.ca.gov/diesel/verdev/vt/vt.htm.

(I) Cost-effectiveness calculations must use the hour-based formula as discussed in Appendix C. Fuel usage may only be used with case-by-case approval from ARB. If using the fuel-based formula, usage must be based on two years of historical fuel usage documentation

specific for the equipment being funded. Documentation may include fuel logs, purchase receipts, or ledger entries.

(J) Future annual hours of equipment operation for determining emission reductions must be based upon readings from an installed and fully operational hour meter. If equipment does not have a functioning hour meter at the time of the project, the hour meter must be installed, repaired and/or replaced. If during the project life the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's cost. If case-by-case approval was provided by ARB to use fuel usage for determining emission reductions, then future annual fuel usage must be based on fuel logs, purchase receipts or ledger entries specific to the funded equipment. LSI equipment may only use the hour based calculation for determining emission reductions.

(K) Project load factors for calculating emission reductions and cost-effectiveness are listed in Appendix D, Table D-10 and Table D-13. Load factors shall be selected by first choosing the equipment category (i.e. Airport GSE, Mobile Agriculture, Construction, etc.), then by selecting the equipment type within the category. This is consistent with how the equipment category and load factor inputs are selected in CARL.

(L) New Electric Equipment

(1) For replacement with electric equipment, costs for battery chargers and necessary peripheral equipment may be included in determination of the grant award. These costs are considered infrastructure and can only be paid for with air district match funds.

(2) For replacement with an electric forklift, electric equipment that is less than 19 kW may be eligible for funding if manufacturer documentation (e.g., manufacturer specification sheet) is submitted verifying the electric forklift capacity is equal to or greater than 3,000 pounds. The verification documentation must be included in the project file.

(3) For replacement with electric equipment other than a forklift that is rated less than 19 kW, equipment may be eligible on a case-by-case basis with prior ARB approval. Documentation must be provided indicating that work performed is equivalent to that performed by a 25 or greater hp LSI engine.

(M) Replacement with zero-emission equipment other than electric must receive case-by-case approval by ARB (e.g., fuel cell equipment).

4. Existing Equipment Destruction Requirements

Equipment replacement requires that the existing high-emitting equipment be scrapped to permanently remove it from service. This ensures that emission reductions are real and prevents the existing equipment from being moved into another locale to continue emitting high levels of pollutants. Destruction of the equipment may occur either at an air district approved salvage yard or another facility in conjunction with an air district salvage inspection. Equipment salvage yards must enter into an agreement with the air district to qualify for participation.

(A) Funding is not available for the salvage of any existing equipment.

(B) The existing equipment salvage value will be negotiated between the participant, the dealership, and the salvage yard.

(C) The old equipment must be destroyed within 60 days of being replaced. The old equipment needs to be destroyed or rendered useless by destroying the engine block as described in Chapter 3: Program Administration, Section BB and by compromising the structural integrity of the equipment. This may be achieved by cutting the structural components of the equipment or some other manner approved by the air district. Documentation of the equipment's destruction must be provided to the air district within 10 days of destruction. Air districts which perform their own salvage inspections must be notified within 10 days of destruction that the salvage inspection can occur.

(D) Air districts must conduct a salvage inspection of the old equipment. Air districts may use an air district approved salvage yard in lieu of this requirement.

(E) If air districts use an air district approved salvage yard, these additional conditions must be met:

(1) Destroy the old equipment and engine within 60 days of receipt of the replacement equipment in accordance with the program guidelines.

(2) Provide the air district with all photographs required under the air district's salvage inspections requirements per section 5.(G)(3) below within
10 business days of salvaging the existing equipment.

(3) The contract must include the make, model, year, serial number, engine make, engine serial number, and the date the equipment is expected to be delivered.

(4) It is the air district's responsibility to ensure that the salvage actually occurs and to obtain a completed certificate of equipment destruction or other similar documentation as defined in the air district's plan.

5. Air District Administrative Requirements

(A) Air districts must establish an off-road equipment replacement plan before they can fund off-road equipment replacement projects. Air district administrative requirements include pre- and post-inspections, monitoring and enforcement considerations, reimbursement procedures, and the development of contracts, which are described below.

(B) Air districts may fund equipment replacement projects through a regional program administered by a designated air district. The designated air district could be either an air district located within the regional program or a large air district located outside of the regional program. A regional equipment replacement implementation plan must be established, containing all the required components as required in an individual air district's equipment replacement implementation plan. A regional equipment replacement plan must also contain detailed description of the funding mechanism among the participating air districts. All air districts participating in the regional program must sign the regional implementation plan and must adhere to all the requirements specified in such regional implementation plan.

(C) The off-road equipment replacement plan must identify the air district's process for oversight and review of dealer identified tasks.

(D) Calculation of funding amounts must be based on the average of at least the two most recent years of documented equipment usage per section C.2.(F) above. Fleet averages cannot be used.

(E) Incentive funding can only be used to pay for items essential to the operation of the equipment.

(F) The air district must receive from the dealer proof of sale of the replacement equipment. Dealers for the purpose of this program are anyone who sells equipment, including private parties.

(G) Air districts are responsible for completing a pre-inspection of the old equipment, a post-inspection of the replacement equipment, and a salvage inspection of the old equipment if equipment destruction is not conducted by an air district approved salvage yard. Pre-inspections may be done by an air district approved dealer.

(1) Pre-inspection must verify the operational condition of the old equipment. The pre-inspection must verify, at a minimum, the following items:

a. Tires in usable condition (able to hold air, sufficient tread or tracks, etc.)
b. Steering wheel operational
c. Equipment able to start up and move backwards and forwards
d. Buckets, blades, rollers, etc. are working
e. Undercarriage structurally sound
f. Fuel tank in usable condition
g. No parts stripped
h. Equipment not vandalized
i. In addition, clear photographs of the old equipment must include the following views:

1. Right Side - hood down
2. Front - hood down
3. Left Side - hood down
4. Equipment serial number
5. Engine Serial Number - either tag or stamp on block
6. DOORS Equipment Identification Number (EIN), if applicable
7. Rear

(2) The post-inspection must include clear photographs of the following views:

a. Picture(s) of equipment
b. Equipment serial number
c. Engine Serial Number and Engine Information – tag
d. Diesel Emission Control Device (if available)
e. Hour meter reading

(3) Salvage inspection must include clear photographs of the destroyed engine block and cut frame rails. In addition, the following views must be taken:

a. Equipment serial number
b. Engine serial number either stamped on the block or on the tag
c. Destroyed engine block either in-frame or out of frame as specified in Chapter 3: Program Administration
d. Cut structural components
e. Other views dependent on the method of equipment destruction

(H) Post-inspection of the replacement equipment and salvage inspection of the old equipment must be completed prior to disbursement of funds.

(I) The air district is allowed to make full payment to the dealer at the time the dealer delivers the replacement equipment to the applicant under the following framework:

(1) The air district must complete the pre-inspection of the old equipment and post-inspection of the replacement equipment to make sure that all equipment complies with program requirements.

(2) The air district must sign a separate memorandum of understanding (MOU) with the dealer and the salvage yard that contains, at a minimum, the program requirements that are expected of each entity and the repercussions for non-compliance with the terms of the MOU for each entity. This shall include, but is not limited to, the requirement that the dealer delivers the old equipment to a qualified salvage yard within 30 days of the date that the old equipment was turned in to the dealer by the applicant.

(3) The air district must ensure the equipment is scrapped within 60 days of the salvage yard's receipt of the equipment through salvage inspection with the salvage yard to properly document the destruction of the existing equipment in accordance with the Carl Moyer equipment replacement program requirements.

(4) Failure on the air district's part to follow up with such salvage inspection would constitute a finding in future ARB's Incentive Program Review of the air district's Carl Moyer Program.

6. Dealer Requirements

(A) Air districts are encouraged to establish contracts with dealers that are selling replacement equipment to participants of this program. If air districts use equipment dealers in implementing the equipment replacement program, reimbursement cannot be issued until all forms are submitted and approved by the air district. Participants may purchase the replacement equipment from a private party, provided all required documentation is submitted. This includes warranty requirements and all other equipment replacement requirements.

(B) Equipment dealers that enter into a contract with an air district must:

(1) Provide basic information about the equipment replacement category. Air districts will provide liaison training to dealership staff.

(2) Inform participants of rights and responsibilities as outlined in the air district and ARB guidelines.

(3) Help the participants complete the application. The equipment dealers will ensure that the participant correctly completes the application. It is important to make sure that all information is filled out correctly and that the participant understands the meaning of the program and the contract. The air district will provide all forms and certificates as appendices to the application. Once complete, the dealer will submit the application package to the air district.

(4) To ensure that an application package contains all necessary information, the dealer must make sure that all the following items are complete and included in the participant's submission to the air district, before reimbursement can be made:

a. Submit a signed and complete application.

b. Provide all documentation as required in Section C. 2. (E) and (F) of these criteria.

c. Provide certification that the existing equipment will be delivered to a qualified salvage yard. The certification must state that the equipment will be picked up by the salvage yard within 30 days of receipt of the old equipment. The certification must include the make, model, year, equipment serial number, engine make, engine serial number, and the date the equipment is expected to be delivered.

d. If equipment destruction will take place at a site other than an approved salvage yard, the application must include a timeline and description how the equipment will be destroyed.

e. Provide documentation of replacement equipment warranty.

f. Provide proof of replacement equipment financing. The financing package will enable the air district to determine the reimbursement costs that may be accrued in case the participant defaults on the contracted performance requirements.

(5) Prior to releasing the replacement equipment to the participant, the dealer must have documentation of an air district pre-inspection of the old vehicle and the post-inspection of the replacement equipment. Upon request of the air district, ARB may waive inspection requirements.

a. If the dealer is air district approved to do pre- and post-inspections, the dealer must submit digital photographs of the old equipment vehicle and the replacement equipment to the air district as defined in the pre-

inspection and post-inspection requirements in Section C. 5 (G) of these criteria. The air district will specify the required digital format.

b. Reimbursement will not be processed until all photographs are received and verified by the air district.

c. Before submitting photographs to the air district, dealers must verify that photographs are clear.

(6) After the application and all required documentation have been approved by the air district, the dealer must provide the air district with proof of sale of the replacement equipment. For the purpose of this program, a dealer is anyone who sells equipment, including a private party.

7. Projects Subject to the Regulation for In-Use Off-Road Diesel-Fueled Fleets

(A) Projects are subject to the general program criteria listed above.

(B) Fleets must be in compliance with the regulation in order to be eligible for and receive funding.

(1) Applicants must submit information regarding fleet size and compliance status. All documentation submitted must be signed and dated by the applicant and include language certifying that the fleet list provided is accurate and complete. Air districts are not required to validate submitted information and will not be held liable if fleet owners falsify fleet information.

a. The following information shall be submitted at the time of application:
   1. The DOORS ID of the fleet.
   2. The DOORS EIN of the (old) existing equipment.
   3. Fleet size information (total horsepower) as reported to DOORS.
   4. Information to determine compliance with the Off-Road Regulation.
      i. Prior to 1/1/2014, large fleets are not required to show compliance with the Off-Road Regulation.
      ii. Prior to 1/1/2017, medium fleets are not required to show compliance with the Off-Road Regulation.
      iii. Prior to 1/1/2019, small fleets are not required to show compliance with the Off-Road Regulation.

b. Applicants must submit to the district the DOORS EIN of the replacement equipment no later than at post-inspection of replacement equipment.

c. Applicants are not required to submit information on exempted equipment. Information on exempted off-road equipment can be found

in the Off-Road Regulation (California Code of Regulations, title 13, § 2449).

(C) No emission reductions achieved from a funded program can count towards a fleet's regulatory requirements for the duration of the project life.

(D) Eligibility for a project is based upon the Best Available Control Technology (BACT) requirements of the regulation.

(1) Any equipment funded through the Moyer program, and that is still under contract, must be deducted from the amount of equipment eligible for funding. For instance, a fleet that is eligible for funding to reduce emissions for 50 percent of its hp, but which has already received funding in previous years to reduce emissions from 20 percent of its hp, is only eligible for funding to reduce emissions from 30 percent of its hp.

(2) Equipment funded through the Moyer program must be included in the fleet's total horsepower from which the BACT requirements of the regulation are calculated.

(E) Large Fleets

(1) Eligible projects for large fleets, as defined in the Off-Road Regulation must provide at least three years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least three years.

(2) Projects must be installed and in operation at least three years before the BACT requirements become effective for the funded equipment.

(3) The first compliance date for large fleets, as defined in the Off-Road Regulation, is January 1, 2014. The final compliance date is January 1, 2023. Funding for these fleets is available through December 31, 2016.

(4) Eligible projects for large fleets must include a particulate matter filter beginning January 1, 2013, for engines 75 hp and greater and January 1, 2014, for engines less than 75 hp. The retrofit waiver in section C.3.(H)(6) is no longer available to projects involving large fleets after the dates specified above.

a. Eligibility shall be determined at the time the air district commits to the proposed project. For purposes of this section, an air district's commitment to a project shall be consistent with that stated in its policies and procedures.

b. If the air district and the applicant do not have an executed contract within six months of project commitment, then the project must include a particulate matter filter in order to be eligible. Alternatively, engines which are certified to the Tier 4 final particulate matter standard or which are certified to a FEL level at or below the Tier 4 final particulate matter standard numerical level remain eligible after the dates listed in C.7.(E)(4) above.

(5) Large fleets may have additional requirements per subsection C.7.(H) below.

(F) Medium Fleets

(1) Eligible projects for medium fleets, as defined in the Off-Road Regulation must provide at least three years of surplus emission reductions to the regulation with a corresponding minimum project life of at least three years.

(2) Projects must be installed and in operation at least three years before the BACT requirements become effective for the funded equipment.

(3) The first compliance date for medium fleets, as defined in the Off-Road Regulation is January 1, 2017. The final compliance date is January 1, 2023. Funding for these fleets is available through December 31, 2019.

(G) Small Fleets (includes Captive Attainment Area Fleets)

(1) Eligible projects for small fleets, as defined in the Off-Road Regulation must provide at least two years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least two years.

(2) Projects must be installed and in operation at least two years before the BACT requirements become effective for the funded equipment.

(3) The first compliance date for small fleets, as defined in the Off-Road Regulation is January 1, 2019. The final compliance date is January 1, 2028. Funding for these fleets is available through December 31, 2025.

(H) Surplus Off-Road Opt-In for NOx (SOON) Program

(1) Fleets located in air districts that have opted in to the SOON program and that are subject to the SOON provisions are eligible for funding in accordance with the Off-Road Regulation (California Code of Regulations,

title 13, § 2449.2) and must meet the applicable criteria in sections 1 through 6 above.

(2) Projects funded under SOON, are not subject to Section C.7., except for the requirements of subsection C.7.(H).

(I) For more information on eligibility of off-road diesel equipment, please see the Regulation for In-Use Off-Road Diesel-Fueled Fleets Carl Moyer Program Implementation Chart available at https://ww3.arb.ca.gov/msprog/moyer/guidelines/2017gl/supplemental/final_combined_green_charts_20180208.pdf.

8. Projects Subject to the Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards

(A) Eligible projects must provide at least three years of surplus emission reductions to the regulation, with a corresponding minimum project life of at least three years. Much of the applicable cargo handling equipment must already be in compliance with the regulation. Therefore, very limited funding opportunities exist.

(B) For more information on eligibility of cargo handling equipment, please see the Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards Carl Moyer Program Implementation Chart available at http://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm.

9. Projects Subject to the Off-Road Large Spark-Ignition Engine Fleet Requirement

The regulation impacts owners of fleets of four or more LSI forklifts and/or four or more LSI sweepers/scrubbers, airport ground support equipment, and/or industrial tow tractors. The fleet size is determined by aggregating an operator's equipment in the State of California.

(A) Eligible funding must provide at least three years of surplus emission reductions to the LSI fleet regulation, with a corresponding minimum project life of at least three years.

(B) Large and Medium Forklift Fleets and Fleets of Four or More Sweeper/Scrubbers, Ground Support Equipment, and/or Industrial Tow Tractors: In order to be eligible for funding, large and medium forklift fleets and fleets of four or more non-forklift LSI equipment must meet the final fleet average emission level applicable on January 1, 2013.

(C) Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer: These fleets are required to either retrofit, repower, or replace 100 percent of their fleet by January 1, 2012 or currently meet a 3.0 g/bhp-hr fleet average HC + NOx level. Fleets that have met the 3.0 g/bhp-hr fleet

average can apply for funding. Additionally, in accordance with SBx2 3, fleets that have retrofitted/repowered 20 percent of their fleet in compliance with the regulation are eligible for funding up to the final compliance date. In order to be eligible, these projects must be under executed contract, and must be installed and in operation prior to the applicable compliance date.

(D) Fleets with equipment not subject to the off-road large spark-ignition engine fleet requirement are eligible for funding, including:

(1) Agricultural crop preparation non-forklift equipment and pre-1990 forklifts.

(2) Forklifts used exclusively in field to harvest and maintain crops.

(3) Non-forklift LSI equipment such as aerial lifts, lawn and garden tractors, commercial turf equipment, mining and construction equipment, crushing and processing equipment.

(4) Small fleets (one to three forklifts and/or one to three sweepers/ scrubbers, airport ground support equipment, and/or industrial tow tractors).

(DI) Parties interested in applying for funding for this equipment should contact the Carl Moyer Program staff at the air district for more detailed information.

10. Projects Subject to the Statewide Truck and Bus Regulation

This regulation impacts the eligibility of all on-road heavy-duty diesel-fueled and alternative diesel-fueled vehicles operated in California with a manufacturer's gross vehicle weight rating greater than 14,000 pounds. Although this regulation primarily affects vehicles with on-road engines, some vehicles with off-road engines are also covered. Any application for Carl Moyer Program funding to replace a vehicle with an off-road engine that is subject to an on-road regulation must comply with the applicable surplus requirements described in Chapter 4. For example, a yard truck with an off-road engine that is subject to the Statewide Truck and Bus Regulation (including yard trucks used primarily in agricultural operations) must meet the applicable on-road surplus requirements described in Chapter 4, Section E, and must also comply with all off-road project criteria described in this chapter.

Chapter 10: PORTABLE AND STATIONARY AGRICULTURAL SOURCES

This chapter describes the minimum criteria and requirements for Carl Moyer Program portable and stationary agricultural engine projects and non-engine agricultural projects as defined in Health and Safety Code section 39011.5. Requirements for self-propelled agricultural use equipment (e.g., tractors) may be found in Chapter 7: Off-Road Compression-Ignition Equipment. Air districts may set more stringent requirements based on local priorities.

A. Projects Eligible for Funding

Most engines eligible for funding under this chapter are regulated under the Stationary Engine Airborne Toxic Control Measure (ATCM), the Portable Engine ATCM, and/or air district rule. There are limited funding opportunities for engines subject to these rules.

Table 10-1
Summary of Agricultural Sources Funding Opportunities

Engine or project type	Subject to ARB Rule	Moyer Funding Opportunities[1]
Stationary diesel agricultural engines	Agricultural Provisions of the Stationary Engine Airborne Toxic Control Measure (ATCM)[2]	Uncontrolled engine repowers: Very limited funding opportunity Tier 1 and 2 engine repowers: Eligible through 12/31/13, Limited opportunity through 12/31/15 Tier 3 engine repowers: Not limited by regulation
Portable diesel agricultural engines		
Portable diesel agricultural engines	Portable Engine ATCM[3]	Limited opportunities
Stationary spark-ignited agricultural engine repower projects	No	Limited opportunities
Electric motors new purchase	No	Limited opportunities
Non-engine agricultural use projects	No	Limited opportunities

[1] Limited funding opportunities mean that projects funding opportunities may be impacted by the compliance dates of the ATCM or air districts local rules. Contact air district Moyer Program staff or consult Carl Moyer Implementation Charts https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm in addition to these guidelines.

[2] Stationary Engine ATCM: http://www.arb.ca.gov/diesel/statport.htm#Stationary

[3] Portable Engine ATCM: https://ww3.arb.ca.gov/diesel/peatcm/peatcmarchive.htm

Project Types: Considering Table 10-1, the following categories are eligible projects:

1. Repower Existing Equipment
2. New Purchase: The Carl Moyer Program allows funding for the purchase of electric motors for new, non-replacement stationary equipment installations.
3. Retrofit Purchase

4. Non-Engine Agricultural Use Projects: Non-engine agricultural use projects may receive Carl Moyer Program funding with approval from ARB on a case-by-case basis.

Please see Section C (Project Criteria) for detailed minimum eligibility requirements for all agricultural sources project categories.

B. Maximum Eligible Funding Amounts

Table 10-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 10-2
Maximum Percent Funding for
Portable and Stationary Agricultural Sources Projects

Project	Maximum
Repower with Diesel Engine	85 percent
Repower with Certified SI Engine	85 percent
Repower with Electric Motor	85 percent
Electric Motor New Purchase	20 percent
Retrofit	100 percent

C. Project Criteria

The minimum qualifications portable and stationary agricultural source projects are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Agricultural Sources Project Criteria

(A) Existing project engines greater than 25 horsepower (hp) (19 kilowatts (kW)) are eligible for funding. The replacement engines may be smaller than 25 hp (19kW). An electric motor less than 19kW or 25 hp may be funded if the applicant provides documentation from the equipment dealer that the electric motor less than 19 kW performs the same work as a 25 or greater hp diesel engine.

(B) The maximum project life for agricultural use engine projects is as follows:

(1) Diesel engines	7 years
(2) Spark-ignited engines	7 years
(3) Electric motors	10 years
(4) Portable Farm equipment* (all projects)	10 years*

*Air districts are required to offer a 10 year project life for portable farm equipment; however, applicants may request a project life less than 10 years. Farm equipment is defined in Appendix B.

A longer project life may receive case-by-case approval by ARB if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements, which may reduce actual project life below these maximum values.

(C) In general, projects must have a minimum project life of three years.

(1) A one year project life is allowed for engines subject to the agricultural engine requirements in the Stationary Engine ATCM. Stationary engines not regulated by the Stationary ATCM must use a minimum three year project life.

(2) In accordance with SBx2 3, portable farm equipment may be eligible for funding up to the compliance date of an applicable in-use rule and a 10 year project life. In order to be eligible, portable farm equipment projects must be under fully executed contract, and must be installed in the equipment and in operation prior to the applicable compliance date.

(CI) State and air district rules impacting agricultural sources must be considered when determining whether projects provide emission reductions surplus to regulatory requirements. Moyer eligibility may be based on the requirements of the local rule if the local rule meets the requirements of Health and Safety Code section 39666(d). An air district requesting to have eligibility based on local rules must have its Air Pollution Control Officer self-certify via email or letter to their ARB Moyer liaison that the local rule is equally as effective as or more stringent than the ATCM. Note: The self-certification described in this section applies solely to the Moyer Program and does not relieve the district of their responsibilities under Health & Safety Code section 39666 or any other ARB program or requirement.

(CII) Cost-effectiveness calculations must use the hour-based formula as discussed in Appendix C. Fuel usage may only be used with case-by-case approval from ARB. If using the fuel-based formula, usage must be based on two years of historical fuel usage documentation specific for the equipment being funded. Documentation may include fuel logs, purchase receipts or ledger entries.

(CIII) Future annual hours of equipment operation for determining emission reductions must be based only on readings from an installed and fully operational hour meter. If equipment does not have functioning hour meter at the time of the project, the meter must be repaired or replaced. If

during the project life the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's cost. If case-by-case approval was provided by ARB to use fuel usage for determining emission reductions, then future annual fuel usage must be based on fuel logs, purchase receipts or ledger entries specific to the funded equipment.

(G) The certification emission standard and/or Tier designation for the engine must be determined from the ARB Executive Order or U.S. EPA Certificate of Conformity (for federally preempted engines) issued for that engine. Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php

(H) Engines that are participating in the "Tier 4 Early Introduction Incentive for Engine Manufacturers" program, as detailed in California Code of Regulations, title 13, section 2423(b)(6), are eligible for Carl Moyer Program funding provided that they are certified to the final Tier 4 emission standards. The ARB Executive Order for these engines indicates that the engines are certified under this provision. The emission rates for these engines used to determine cost-effectiveness shall be equivalent to the emission factors associated with Tier 3 engines. Air districts must retain this documentation in the project file.

(I) For equipment with baseline engines manufactured under the flexibility provision, detailed in California Code of Regulations, title 13, section 2423(d), baseline emission rates shall be determined by using the previous applicable Tier emission standard for that engine model year and horsepower rating. The ARB Executive Order for these engines indicates that the engines are certified under this provision. Air districts must retain this documentation in the project file.

(J) Funding for pump and associated plumbing costs associated with engine/motor projects require a case-by-case approval by ARB. However, the pump cost in a submersible pump-motor system is allowable and does not require a case-by-case.

(K) Costs for necessary peripheral equipment associated with electric motor projects that may be included in the grant award amount, include the service pole forward (e.g., service pole with guy wire, control panel, motor leads, concrete pad, headshaft or gear head and tubing if required for diesel to motor conversion, and up to 150 feet of connecting electric line from the pole forward to the motor).

(L) Variable frequency devices (VFD) may be eligible for funding provided the air district must report VFD cost and serial number information in CARL.

(M) Air district match funds may be used for infrastructure purchase and installation (e.g., line extension for electric motor projects for only Moyer qualifying project categories except as prohibited in Health and Safety Code section 44287(j)).

(N) Electrical line extension costs are not eligible for funding if a motor is not included with the project.

(O) Air district match funds may be used to offset the higher cost of electricity relative to diesel fuel, if applicable. In this case, the fuel cost difference will be accounted for when calculating the cost-effectiveness of the project.

(P) In electric motor projects, the applicant must have documentation of application or payment to the local utility company for power installation. This documentation requirement applies to new motor and repower installations.

(Q) A new electric motor on an agricultural irrigation pump project that is under contract may be considered for invoice payment once the motor has been delivered to the project site and the motor has been connected to the electricity grid.

(R) All case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements as described in Chapter 3, Section Y.

2. Repower

A repower is the replacement of the in-use engine with an electric motor or a new, current model year engine instead of rebuilding the existing engine to its original specifications.

(A) A repower of an engine must be with one of the following:

(1) A new electric motor.

(2) A new off-road diesel engine certified to the current applicable emission standards.

(3) A new off-road spark-ignited (SI) engine certified to the current applicable emission standards.

(4) A new SI engine that exceeds air district emission requirements and is subject to and complies with air district permitting, monitoring, record keeping and reporting requirements.

(B) Engine/motor repower projects in which the horsepower of the new engine/motor is an increase to 150 percent or larger from the baseline (existing) engine may be funded at an air district's discretion if the applicant pays for the additional cost associated with the larger engine/motor. The maximum eligible grant funding will be based on the cost of the smaller sized replacement engine/motor. The emission reduction calculations shall be based upon the funded (higher horsepower) engine/motor. Air district's that choose this option shall include in the project file, documentation of the equipment cost of the funded (higher horsepower) engine/motor as well as the method used to determine the project grant amount (e.g. dealership cost estimate of the lower horsepower engine/motor.)

(C) A repower project in which the total number of existing engines is different than the total number of replacement engines/motors requires a non-calculation project entry into CARL. If the total sum of the new engine(s)/motor(s) horsepower is greater than 125 percent of the sum of the existing engine(s)/motor(s) total horsepower then the load factor will need to be adjusted. If the total horsepower increase is greater than 150 percent then criteria C.2.(B) applies.

(D) SI engines cannot be replaced with diesel engines.

(E) Electric motors may replace diesel or SI engines.

(F) A repower of an emissions-controlled SI engine with a new SI engine that meets or exceeds air district emission requirements and is subject to and complies with air district permitting, monitoring, record keeping and reporting requirements is eligible and must achieve an annual oxides of nitrogen (NOx) emission benefit of at least 15 percent.

(G) Repowering to a Tier 1 or Tier 2 diesel engine is not allowed.

(H) If repowering with an engine meeting the current applicable standard is technically infeasible, unsafe, or not available when the air district commits to the proposed project, the replacement engine must meet the most current practicable previously applicable emission standard. For purposes of this section, air district's commitment to a proposed project shall be consistent with that stated in their policies and procedures. The air district shall determine eligibility of a repower project using an engine certified to a previous emission standard by one of the following methods:

(1) At the applicant's request, confirmation of availability of an engine meeting the most recent emission standards or Tier may be limited to the same manufacturer as the existing engine.

(2) If the air district and the applicant do not have an executed contract within six months of project commitment, then the air district must recheck for the availability of engines meeting the current standard.

(3) Documentation that engines meeting the current applicable standard are unavailable must be provided to the air district. Acceptable documentation that engines meeting the most recent emission standard are unavailable include:

a. Verifiable information from the engine manufacturer, engine distributor and/or engine dealer regarding the unavailability of engines meeting the current emission standard or Tier.

b. Confirmation (a written declaration by the air district is acceptable) that engines from a specific manufacturer meeting the current emission standard or Tier are not certified (Executive Order is not available on ARB website). Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php.

(I) Equipment manufactured under the "Flexibility Provisions for Equipment Manufacturers", as detailed in California Code of Regulation, title 13, section 2423(d), are ineligible for Carl Moyer Program funding as a replacement engine.

(J) The use of an uncertified SI engine shall be subject to approval by ARB staff.

(1) Uncertified SI engines must include currently available emission control components such as closed-loop fuel control systems, and three-way catalysts.

(2) Uncertified SI engines must be source tested with an ARB-approved testing procedure, such as ARB Test Method 100, following air district requirements. Source testing shall be conducted upon installation.

(3) Uncertified SI engines must be emission tested using a portable analyzer every 1,000 hours of operation and at least annually, or following air district monitoring requirements, whichever is most stringent. The emission tests shall measure NOx and hydrocarbon emissions. An alternative monitoring schedule may be used upon approval by ARB staff.

(4) The costs associated with source testing and monitoring requirements for uncertified SI engines are not eligible for funding.

(K) All engines replaced as part of a repower project must be destroyed and rendered useless, consistent with the requirements of Chapter 3: Project Administration, Section BB.

3. New Purchase: A new purchase is an engine or motor that is not replacing an existing engine. This is currently only available for non-mobile agricultural electric motors purchases of new motors. Moyer eligible peripheral equipment costs are covered in this chapter. Refer to section C.1.(K).

4. Retrofit

Retrofit is the installation of an ARB-verified diesel emission control system on an existing engine. Examples include, but are not limited to, particulate filters and diesel oxidation catalysts. More information on retrofits may be found at http://www.arb.ca.gov/diesel/verdev/verdev.htm.

(A) A retrofit of an uncontrolled SI engine that reduces NOx must be with a retrofit kit that is verified to reduce NOx or NOx + Non-Methane Hydrocarbons (NMHC) emissions to the currently applicable off-road LSI engine standard.

(B) Engines equipped with original engine manufacturer aftertreatment devices are ineligible for retrofit funding due to issues with engine warranty and anti-tampering provisions.

(C) The cost of the retrofit, filters, hour meter if none exists on the equipment, and maintenance of the retrofit device needed during the project life is eligible for incentive funding, provided its inclusion in the project cost still meets the weighted cost-effectiveness limit. The datalogging cost of a retrofit-only project cannot be included in the total project cost.

5. Non-Engine Agricultural Use Projects require a case-by-case approval by ARB prior to receiving Moyer funds.

6. Projects Subject to the Agricultural Provisions of the Stationary Engine ATCM

(A) Diesel engines regulated under the Stationary Engine ATCM must be registered (or permitted) in an air district to be eligible for repower projects.

(B) Diesel engine to diesel engine repower costs claiming only NOx and reactive organic gases (ROG) emission benefits based on surplus to local rules and meeting the conditions of section C.1.(D) are eligible for Carl

Moyer Program funding at a reduced rate of half of the typical 85 percent repower (i.e., 42.5 percent).

(C) A retrofit of an uncontrolled off-road diesel engine (regulated under the Stationary Engine ATCM) that reduces NOx must be with a retrofit kit that is verified to reduce NOx or NOx+NMHC emissions to the applicable current off-road engine Tier standard or less.

(D) For more information on eligibility of engines regulated by the Stationary Engine ATCM, please see the Stationary Engine Airborne Toxic Control Measure Implementation Chart available at: https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm.

7. Projects Subject to the Portable Engine ACTM

(A) Portable equipment owned by agricultural service companies, rental companies, public agencies, and non-agricultural service companies are subject to the Portable Engine ATCM and meet the definition of farm equipment per Chapter 7. These projects must follow the criteria outlined in this chapter (Chapter 10).

(B) Diesel engines regulated under the Portable Engine ATCM must be registered (or permitted) in an air district to be eligible for repower projects or documentation must be included in the project file from the air district stating that a registration (or permit) is not required to operate in the air district.

(C) Uncontrolled engines subject to the Portable Engine ATCM are not eligible for repowers.

(D) An existing Tier 1 or Tier 2 engine subject to the Portable Engine ATCM and subject to SBx2 3 may use a 10 year project life and may be eligible for funding up to the compliance date of an applicable in-use rule.

(E) Portable equipment with Tier 2 engine repowered with a Tier 3 engine must also be equipped with a verified retrofit in order to be eligible for funding.

(F) Retrofit projects for engines regulated under the Portable Engine ATCM that control particulate matter (PM) must use the highest level technically feasible technology available for the equipment being retrofitted. ARB considers the retrofit device that achieves the highest level of PM reductions (level 3 - 85 percent) and the highest level of NOx reductions to be the highest level retrofit.

(G) For more information on eligibility of engines used in portable equipment, please see the Portable Engine Airborne Toxic Control Measure Implementation Chart available at: https://ww3.arb.ca.gov/msprog/moyer/guidelines/current.htm.

Chapter 11: LOCOMOTIVES

This chapter describes the minimum criteria and requirements for Carl Moyer Program locomotive projects. Air districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

Carl Moyer Program funding for California's larger Class 1 freight railroads is generally limited due to the availability of Goods Movement Emission Reduction Bond Program (Proposition 1B Goods Movement Program) funding, and the South Coast and Statewide Memoranda of Understanding (MOU) with these railroads (See Table 11-1).

Table 11-1
Summary of Locomotive Funding Opportunities

Railroad Class	Subject to ARB Rule or MOU	Moyer Funding Opportunities
Class 1 Freight Railroads (Burlington Northern Santa Fe Railroad and Union Pacific Railroad)	*2005 Statewide Railyard Agreement*[1] and *1998 South Coast MOU*[2]	Very limited opportunity. Projects in California's goods movement trade corridors are generally ineligible for funding due to the availability of Proposition1B funds.[3] These projects are only eligible for Carl Moyer Program funding on a case-by-case basis.
Class 3 Freight Railroads and Passenger Railroads	No	Class 3 and passenger railroad projects are not limited.

[1] Class 1 freight railroads are ineligible for ILD project funding due to the 2005 Statewide MOU. See: http://www.arb.ca.gov/railyard/ryagreement/083005mouexecuted.pdf

[2] The South Coast MOU further limits funding eligibility for Class 1 freight railroad new purchase or engine remanufacture/repower projects in the South Coast. See: http://www.arb.ca.gov/msprog/offroad/loco_flt.pdf

[3] For a map of the trade corridors, see: http://www.arb.ca.gov/bonds/gmbond/docs/gmtradecorridors.jpg

Project Types: Five types of locomotive projects are eligible for Carl Moyer Program
funding:

1. Locomotive replacement
2. Idle limiting device (ILD)
3. U.S. EPA certified engine remanufacture kit or repower/ refurbishment
4. ARB verified retrofit
5. Head end power unit (HEP)

B. Maximum Eligible Funding Amounts

Table 11-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 11-2
Maximum Grant Amount for Carl Moyer Program Locomotive Projects

Railroad Class/Type	Locomotive Replacement	Idle Limiting Device (ILD)	Refurbishment or Certified Remanufacture Kit
Class 1	50 percent	not eligible	50 percent
Class 3, Passenger, Military, and Industrial	85 percent	50 percent (passenger locomotives on case-by-case basis)	Tier 0+: 75 percent* Tier 1+: 80 percent* Tier 2+: 85 percent*

** "+" is used to refer to the new U.S. EPA locomotive engine remanufacture standards (U.S. EPA, 2008)*

C. Emission Standards

The U.S. EPA has adopted regulations for exhaust emission standards for new and remanufactured locomotives. For reference, Tables 11-3 and 11-4 below summarize the hydrocarbon (HC), oxides of nitrogen (NOx) and particulate matter (PM) standards in grams per brake horsepower-hour (g/bhp-hr) for the 1998 Federal Standards and the 2008 Federal Standards.

Table 11-3
Locomotive Emission Standards (g/bhp-hr)
Based on 1998 Federal Standards

Engine Model Year	Type	NOx[1]	ROG[2]	PM10[1]
1973-2001 Tier 0	Line-haul and Passenger	8.93	1.05	0.516
	Switcher	13.16	2.21	0.619
2002-2004 Tier 1	Line-haul and Passenger	6.96	0.58	0.387
	Switcher	10.34	1.26	0.464
2005-2011 Tier 2	Line-haul and Passenger	5.17	0.32	0.172
	Switcher	7.61	0.63	0.206

These factors are to be used for the project baseline emissions if the baseline locomotive is certified or required to be certified to the 1998 federal locomotive remanufacture standards and for the reduced emission locomotive if the project locomotive is remanufactured to these 1998 standards. Factors are based upon Regulatory Impact Analysis: Final U.S. EPA Locomotive Regulation (2008).

[1] NOx and PM10 emission factors have been adjusted by a factor of 0.94 and 0.86, respectively, to account for use of California ultra-low sulfur diesel fuel.

[2] Reactive Organic Gases (ROG) = HC * 1.053

Table 11-4
Locomotive Emission Standards (g/bhp-hr)
Based on 2008 Federal Standards

Engine Model Year	Type	NOx[1]	ROG[2]	PM10[1]
1973-2001 Tier 0+	Line-haul and Passenger	6.96	0.58	0.189
	Switcher	11.09	2.21	0.224
2002-2004 Tier 1+	Line-haul and Passenger	6.96	0.58	0.189
	Switcher	10.34	1.26	0.224
2005-2011 Tier 2+	Line-haul and Passenger	5.17	0.32	0.086
	Switcher	7.61	0.63	0.112
2011-2014 Tier 3	Line-haul and Passenger	5.17	0.32	0.086
	Switcher	4.70	0.63	0.086
2015 Tier 4	Line-haul and Passenger	1.22	0.15	0.026
	Switcher	1.22	0.15	0.026

These factors are to be used for the project baseline emissions if the baseline locomotive is certified or required to be certified to the new (2008) federal locomotive remanufacture standards, and for the reduced emission locomotive if the project locomotive is remanufactured to the new standards or meets Tier 3 standards. Factors are based upon Regulatory Impact Analysis: Final U.S. EPA Locomotive Regulation (2008).

[1] NOx and PM10 emission factors have been adjusted by a factor of 0.94 and 0.86, respectively, to account for use
of California ultra-low sulfur diesel fuel.

[2] ROG = HC * 1.053

D. Project Criteria

The minimum qualifications for locomotives are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria, and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns. Note that railroad classes are defined in Appendix B.

1. General Locomotive Project Criteria

   (A) Class 1 freight locomotive projects meeting the eligibility requirements for the Proposition 1B Goods Movement Program are only eligible for Carl Moyer Program funding on a case-by-case basis. Carl Moyer Program funds cannot be commingled with Proposition 1B Goods Movement Program funds.

   (B) Class 1 freight locomotives subject to the South Coast Memorandum of Understanding (MOU) are only eligible for Carl Moyer Program funding on a case-by-case basis. These locomotive projects must be excluded from the fleet average emission rate calculations which demonstrate compliance with the MOU provisions. The baseline emission rates used

to determine emission reductions and cost-effectiveness for these locomotive projects reflect the Tier 2 emission rates for line-haul and switch locomotives identified in Appendix D, Table D-17.

(C) Class 2 railroad locomotives are subject to the same federal remanufacture requirements as Class 1 locomotives. There are currently no Class 2 railroad operators based in California. Should a Class 2 railroad apply for Carl Moyer Program funds, project eligibility and parameters shall be evaluated on a case-by-case basis.

(D) Military and industrial railroads are considered Class 3 railroads for the purposes of the Carl Moyer Program.

(E) Locomotive project activity must be based upon fuel consumption. Air districts may propose alternate project activity, such as actual usage data logged electronically by one or more locomotives, for case-by-case approval.

(F) Carl Moyer Program funds cannot be used to pay for labor or parts used during routine maintenance.

(G) For all liquefied natural gas-diesel or other dual-fuel locomotive projects, fuel consumption by fuel type must be monitored for the duration of the project life.

(H) All locomotive projects receiving more than $50,000 per locomotive in Carl Moyer Program funds must include the purchase and installation of an ILD if the locomotive is not already equipped with such a device and installation is technically feasible. Please see Part 3 of this section for ILD project minimum requirements.

(I) Projects in which a Carl Moyer Program grant is made to a locomotive manufacturer or other third party, who in turn leases the project locomotive to an end user, are eligible for funding on a case-by-case basis. Factors to be considered include project life, lease terms, reporting and enforceability provisions, and other project parameters.

(J) Locomotives must be both certified by EPA and verified by ARB in order to be eligible for funding.

2. Locomotive Replacement

Locomotive replacements are funded by the Carl Moyer Program and include Tier 4 locomotives (or cleaner), genset locomotives (multi-engine switcher) and electric-hybrid locomotives. Multi-engine switchers are typically powered by two or three off-road engines, while electric-hybrids use a small diesel engine to charge batteries

that provide locomotive power. United States Environmental Protection Agency (U.S. EPA) considers a refurbished locomotive a new locomotive if it includes at least 75 percent (by value) new parts.

(A) The locomotive replacement must achieve a NOx emission rate of 3.5 g/bhp-hr and a PM emission rate of 0.10 g/bhp-hr.

(1) New locomotives with an aggregate engine power rating greater than or equal to 1,006 horsepower (750 kW) must be certified by U.S. EPA and verified by ARB to achieve this emission level (or cleaner).

(2) New locomotives with an aggregate engine power rating less than 1,006 horsepower are not required to be certified by U.S. EPA to locomotive standards. If not certified as a locomotive by U.S. EPA, the engines in the lower horsepower locomotives must be certified by ARB, and may be evaluated and considered for funding based upon the project engine on-road or off-road certification and corresponding Carl Moyer Program emission factor on a case-by-case basis.

(B) Project locomotive emission rates will be the U.S. EPA emission rates unless the locomotive is certified to family emission limits (FEL).

(1) U.S. EPA certified emission rates for the project locomotive are found at www.usepa.gov/otaq/certdata.htm. On the U.S. EPA spreadsheets, "L/H" refers to a line haul locomotive, "SW" refers to a switcher, and "THC" refers to total hydrocarbons. The U.S. EPA emission factors must be adjusted as follows (see Table 11-5): THC must be converted to ROG by multiplying by 1.053, and NOx and PM must be multiplied by 0.94 and 0.86, respectively, to account for the use of ultra low sulfur diesel. If this emission factor data is not made available by EPA for a locomotive which has been certified by EPA based on off-road engine certifications, districts must ask ARB to provide or approve appropriate locomotive emission factors.

Table 11-5
Adjustments to EPA Emission Rates for Project Locomotive
(multipliers for rates from U.S. EPA spreadsheets)

THC	NOx	PM
1.05	0.94	0.86

(2) FEL certified locomotive emission rates are the emission standards for that locomotive model year. The FEL level must be lower than the required emission standard to be eligible for funding.

(C) Baseline emissions for a locomotive replacement project reflect Tier 0 emission rates for Class 1 and intercity passenger and commuter

locomotives and uncontrolled emission rates for Class 3 locomotives and small passenger locomotives related to tourism, unless the locomotive to be replaced is currently certified, or is required by the U.S. EPA at the time of next rebuild to be certified, to a more stringent tier. In this situation, the baseline emission for calculation purposes must reflect the current or required, tier.

(D) An alternative technology switcher must use the cleanest engine available certified to either the on-road or off-road engine standards.

(E) Due to the design of alternative technology switchers, fuel consumption for the new locomotive may differ from baseline fuel consumption. Air districts may assume a fuel savings of 20% to estimate the fuel consumption for inclusion in the grant agreement. This fuel savings is already embedded into the cost-effectiveness calculation, and therefore it should not be applied when determining cost-effectiveness for the project.

(F) Alternative technology locomotives which are not switch locomotives may be considered for funding on a case-by-case basis.

(G) Project life:

(1) Class 1 locomotive replacement projects in air districts other than the South Coast must have a minimum project life of 10 years. ARB may approve a project life of less than 10 years for these locomotives on a case-by-case basis. Projects with shorter lives may be subject to additional funding restrictions, such as a lower cost-effectiveness limit or a project cost cap.

(2) All other locomotive projects have a minimum project life of three years.

(3) The maximum project life for a locomotive new purchase project is 20 years.

3. Idle-Limiting Device

Installation of an ILD can significantly reduce emissions from locomotives, which typically spend 40 to 60 percent of their operating time in the idle duty cycle.

(A) ILD projects for Class 1 and intercity passenger and commuter locomotives and all other locomotives that are required by U.S. EPA to install an ILD at time of engine remanufacture are not eligible for Carl Moyer Funding.

(B) If not already required by a rule, regulation, MOU, or other legal mandate, the Carl Moyer Program may pay up to 50 percent of the purchase and

installation cost for an ILD for Class 3 and Small Passenger locomotives related to tourism.

(C) Locomotives with an existing ILD are only eligible on a case-by-case basis.

(D) ILD emission reductions are calculated by applying the ILD factors in Appendix D, Table D-18.

(E) All ILDs must comply with applicable durability and warranty requirements.

(F) The maximum project life for a locomotive ILD project is 10 years.

4. U.S. EPA-Certified and ARB verified Engine Remanufacture Kit or Locomotive Refurbishment

Engine remanufacture kits typically include new fuel injectors, cylinder head assemblies, pistons, and other engine components. Engine remanufacture kits must be certified by U.S. EPA, verified by ARB and meet all of the following criteria to be eligible for Carl Moyer Program funding. Locomotive refurbishments (or repowers) are also eligible for funding, provided the engine is certified and verified.

(A) Purchase and installation of the cleanest available tier U.S. EPA-certified and ARB verified remanufacture kit or refurbishment (engine repower) is eligible for Carl Moyer Program funding. Applicants must provide evidence that the kit for which funding is requested is the cleanest available kit certified for use on the project locomotive.

(B) Remanufacture kits must be demonstrated not to increase in-use emissions of NOx, ROG, or PM emissions.

(C) Locomotive engine remanufacture and refurbishment projects must achieve at least a 30 percent NOx reduction beyond baseline emission levels.

(D) Alternative-fueled engines must be ARB- or U.S. EPA-certified to achieve a reduced emission level in a locomotive application. Alternative-fueled engines not certified to achieve a reduced emission limit in a locomotive application may be eligible for funding on a case-by-case basis.

(E) Baseline emissions reflect the emissions tier level required by federal locomotive remanufacture standards; i.e., the baseline emissions are the required remanufacture standard, which may not be the certification standard of the baseline locomotive.

(1) Class 1 and passenger railroad use the emission rates associated with the federally required remanufacture tier see Table 11-4 and Appendix D, Table D-17b.

(2) Class 3 and small passenger locomotives use the uncontrolled emission rates in Appendix D, Table D-17a, unless the locomotive engine has already been upgraded to emit at a cleaner (Tier 0-2) emission level. In this case, baseline emissions would reflect existing engine Tier emission rate as indicated in Appendix D, Table D-17a or D-17b.

(F) The U.S. EPA Certificate of Conformity (such as that shown in Appendix E, Figure E-2) identifies the applicable locomotive models and model years for which the remanufacture kit may be used, as well as the engine family used to verify the emission rate associated with the remanufacture kit. Emission reductions and cost effectiveness calculations shall use the factors from the Tier to which the kit is certified.

(G) The eligible costs for a Carl Moyer Program remanufacture kit or repower project include only (1) those items the Certificate of Conformity identifies as being part of the rebuild kit and (2) those the certificate indicates must be contained in the base engine. Each of these specific items on the Certificate of Conformity must be individually itemized in the project invoice. Typical eligible costs of the remanufacture kit may also include the following items: camshafts, injectors, power assemblies (including piston rings, cylinder lines and cylinder head pistons), engine CPU, engine software, aftercoolers, heat exchangers (including radiators and oil cooler), cooling circuits, cooling fans, microprocessor, fuel injectors, oil separator element, governor, water, cooling, and scavenging pumps and pump installation kits, top deck cover seals, rocker arm sets, valve bridges, rod bearing sets, top deck cover seals, blower thrust valves, lower liner inserts, and locomotive control system software. Other items may be eligible for funding on a case-by-case basis.

(H) Project life:

(1) Remanufacture kit projects have a maximum project life of six years. A longer project may receive case-by-case approval if applicants provide justifying documentation. If fuel injectors are required to be replaced by the U.S. EPA Emissions Warranty for the project kit before the end of the project life, the applicant must commit via contract to replace the injectors as required with equivalent low-emission injectors. The Carl Moyer Program project cost may include funds for the replacement injectors. The project annual reports must include documentation that all required maintenance identified in the U.S. EPA Emissions Warranty is completed on schedule. Maintenance other than replacement of low-emission fuel injectors is not eligible for Carl Moyer program funding.

(2) The maximum project life for a locomotive refurbishment project is 10 years if the new engine does not meet current federal new locomotive standards and 20 years if it meets or is cleaner than required by these standards.

5. Retrofit

Retrofits involve hardware modifications to the engine or exhaust system to reduce emissions, and include selective catalytic reduction, diesel oxidation catalysts or diesel particulate filters. Other retrofit projects may be eligible for funding on a case-by-case basis.

(A) A retrofit device must be ARB- verified to reduce emissions from the project engine in order to be eligible for funding.

(B) Up to 100 percent of the total cost of a locomotive retrofit project is eligible for Carl Moyer Program funding.

6. Head End Power Unit (HEP)

(A) HEP replacement is eligible on a case-by-case basis.

(B) The baseline engine must be certified to the applicable off-road standard at the time of manufacture.

(C) The replacement engine must use the cleanest engine available.

Chapter 12: MARINE VESSELS

This chapter describes the minimum criteria and requirements for Carl Moyer Program marine vessel projects. Air districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

Air Resources Board (ARB or the Board) has adopted two regulations that impact funding opportunities for marine vessel projects: 1) Amendments to the Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline (Commercial Harbor Craft regulation or CHC) and 2) Regulations to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port (Shore Power Regulation). There are limited funding opportunities for marine vessels subject to these regulations.

Table 12-1
Summary of Funding Opportunities

Project Type	Subject to ARB Rule	Moyer Funding
Vessels subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: barge, crew & supply, dredge, excursion, ferry, towboat, tugboat) - engine repower, remanufacture, retrofit or new purchase	Commercial Harbor Craft Regulation[2]	Limited opportunity
Vessels ***not*** subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: fishing vessel or pilot/work boat) - engine repower, remanufacture, retrofit or new purchase	No	Not limited by regulation
Shore power - shore-side	Shore Power Regulation[3]	Very limited opportunity
Shore power - vessel retrofit	Shore Power Regulation[3]	Limited opportunity

[1] Limited opportunities means a fleet's compliance status with the ARB regulation must be determined. Contact air district Moyer Program staff or consult CHC regulation Carl Moyer Implementation Charts at: http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm in addition to these guidelines.

[2] Harbor Craft Regulation: http://www.arb.ca.gov/ports/marinevess/harborcraft.htm

[3] Shore Power Regulation: http://www.arb.ca.gov/ports/shorepower/shorepower.htm

Project Types:

1. Engine Repower: Replacing an old vessel engine with a newer, lower emission engine. Limited opportunities remain for those vessel engines subject to the in-use compliance requirements of the CHC regulation. Repower must be completed at least three years prior to the vessel's in-use compliance date. Based on the vessel's operation, the newer engine's emissions must be surplus to the currently required United States Environmental Protection Agency (U.S. EPA) marine engine emission standard (i.e., Tier 2 or cleaner).
   Remanufacture Kit: Kits are comprised of engine component parts that, when installed, reduce the engine's emissions. Limited Moyer funding opportunities remain for those vessel engines subject to the in-use compliance requirements of the CHC. Remanufacture must be completed at least three years prior to the vessel's in-use compliance date.

2. Retrofit Device: The installation of an ARB verified diesel emission control strategy (VDECS). This project type will be considered for funding on a case-by-case basis.

3. New Purchase: New marine vessels with propulsion and auxiliary engines certified to be at least 30 percent cleaner than the applicable oxides of nitrogen (NOx) emission standard are eligible for Carl Moyer Program funding on a case-by-case basis.

4. Shore Power Projects: Due to regulatory compliance deadlines, all shore-side shore power projects within port locations subject to the regulation must be completed and operational prior to January 1, 2014. Ship-side shore power projects will not be eligible after this date unless the applicant can demonstrate that it will be surplus to the implementation requirements of ARB's Shore Power Regulation. Shore-side projects meeting the eligibility criteria of the Proposition 1B Goods Movement Program are eligible for Carl Moyer Program funding only on a case-by-case basis. Carl Moyer Program funds cannot be commingled with Proposition 1B Goods Movement Program funds.

Please see Section C (Project Criteria) for detailed minimum eligibility requirements.

B. Maximum Eligible Funding Amounts

Table 12-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix G.

Table 12-2
Maximum Project Costs Eligible for Carl Moyer Program Funding

Project Type		Maximum
Vessels subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: barge, crew & supply, dredge, excursion, ferry,	Engine repower or remanufacture kit	50 percent
Vehicles **not** subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: fishing, pilot, work boat)	Engine repower or remanufacture kit compliant to EPA marine Tier 2 emission level	80 percent
	Compliant to EPA marine Tier 3 emission level	85 percent
Any vessel propulsion engine repower with an off-road Tier 2 or cleaner certified engine.		Case-by-Case Basis
ARB Verified Marine Retrofit Device		Case-by-Case Basis
New Vessel Purchase		Case-by-Case Basis
Shore power – shore-side		50 percent of transformer & other equipment between the vessel and
Shore power – ship-side		100 percent of retrofit cost; 50 percent of transformer cost

C. Project Criteria

The minimum qualifications for marine vessels are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria, and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Marine Project Criteria

   (A) To be eligible for Carl Moyer Program funding, an applicant for harbor craft funding must have a United States Coast Guard Documentation Number, except in cases where such documentation is not required (such as fishing boats constructed outside the United States, vessels of less than five net ton displacement, or vessels owned by non-United States citizens). In such cases, the applicant must include with the application documentation at least one of the following:

(1) A valid California vessel registration (CF) number and a copy of the California Department of Fish and Game license can be provided instead of a Coast Guard Documentation Number.

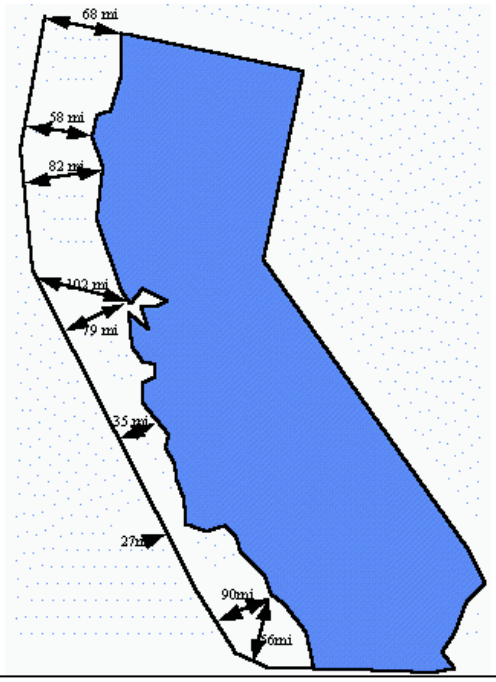
(2) The vessel's Lloyd's/International Maritime Organization (IMO) number for an oceangoing vessel that does not have any of the above documentation.

(B) Both propulsion and auxiliary engines are eligible for Carl Moyer Program funding.

(C) Only marine vessel activity in California coastal waters and internal waters may be used to determine project emission reductions. Figure 12-1 depicts the boundary of California coastal waters (defined as that area between the California Coastline and a line starting at the California-Oregon border at the Pacific Ocean, thence to 42.0°N 125.5°W, thence to 41.0°N 125.5°W, thence to 40.0°N 125.5°W, thence to 39.0°N 125.0°W, thence to 38.0°N 124.5°W, thence to 37.0°N 123.5°W, thence to 36.0°N 122.5°W, thence to 35.0°N 121.5°W, thence to 34.0°N 120.5°W, thence to 33.0°N 119.5°W, thence to 32.5°N 118.5°W, and ending at the California-Mexico border at the Pacific Ocean).

Figure 12-1

California Coastal Water Boundaries



(D) Non-captive California fleets and vessels may be considered for funding on a case-by-case basis if their operation in California coastal waters can be properly documented.

(E) Funding is not available for projects where spark-ignition engines are replaced with diesel engines. Repowering a diesel engine to a spark-ignited engine may be considered on a case-by-case basis.

(F) Only marine engines equal to or greater than 25 horsepower are eligible for Carl Moyer Program funding.

(G) Harbor craft engines less than 50 horsepower are exempt from the in-use compliance requirements of the Harbor Craft Regulation. These engines are considered surplus.

(H) Engines on marine vessels with wet exhaust systems are eligible for Carl Moyer Program funding if the project vessel meets all other applicable program requirements. The wet exhaust systems themselves are not eligible for Carl Moyer Program funding. A wet exhaust factor of 0.80 must be applied to the baseline and reduced emission propulsion and auxiliary engine emission calculations for all projects on vessels with wet exhaust systems.

(I) New engines must be installed and operational at least three years prior to the compliance deadline specified by the CHC regulation. Project life for an engine cannot extend beyond that engine's compliance deadline. For compliance deadlines, see implementation charts at: http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(J) Air districts have the option of calculating the project cost-effectiveness on a per vessel basis.

(K) Carl Moyer Program funding can be based on engine hours or fuel use. All harbor craft vessels are required to install and maintain a functioning hour meter as required by the Commercial Harbor Craft Regulation. Hours of operation are the preferred basis for project cost-effectiveness calculations and eligibility. Air districts have the option of requesting and utilizing historical fuel usage. This data must be based on the previous two years of historical fuel usage documentation specific to the vessel being funded. Acceptable forms of documentation may include fuel logs, purchase receipts or ledger entries. Grant funding that is based on historical fuel usage may not exceed the grant funding amount that would be based on hours of operation; the more conservative calculation must be used.

(L) Owners and operators of engines subject to the Commercial Harbor Craft Regulation must include a copy of the most recent Initial Report in their project application. The reporting requirements are outlined under California Code of Regulations, title 17, section 93118.5(h)(1).

2. Repower

Repower projects involving the replacement of an older harbor craft engine with a newer, cleaner engine must meet the following criteria:

(A) All new engines and replacement engines purchased for Carl Moyer Program marine vessel repower projects must meet the requirements of the Commercial Harbor Craft Regulation set forth under California Code of Regulations, title 17, sections 93118.5(e). The regulation includes requirements for newly acquired engines and requirements for replacement engines in vessels subject to the schedules to meet Tier 2 and Tier 3 standards. Use of an off-road certified engine must adhere to the requirements set forth under California Code of Regulations, title 17, sections 93118.5(e)(3) and (e)(4), especially the marinization requirements set forth in Code of Federal Regulations, title 40, part 1042.605. Project proposals for repower of propulsion engines with off-road engines will be considered on a case-by-case basis.

(B) For all marine engine repower projects, the replacement engine must provide at least a 15 percent NOx reduction relative to the baseline engine. The replacement engine cannot be significantly modified or reconfigured in any way during the project life.

(C) The maximum project life for a marine vessel repower project is 16 years. A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(D) The total project repower cost may include charges for the following:

(1) The capital cost of the new engine.

(2) Purchase of or modifications to the cooling system; fuel and exhaust system; wiring, panel, and harness system; power take-offs; propulsion control system; gauges and alarms; and radiator and ventilation, if attached to or integral to the functioning of funded engine.

(3) Costs related to the purchase and/or installation of a new transmission may be eligible when it is a necessary part of the engine repower; and an ineligible expense when it is required for maintenance or repair purposes. Ordinarily, a statement from the vendor or applicant that the new reduced emissions engine is not compatible with the existing baseline transmission is sufficient justification for eligibility; please retain a copy of the vendor or applicant's statement(s) or other documentation in the project file.

(4) Frames needed to be extended or other parts needed to be cut or modified in order to accommodate the new engine, as well as paint or coating needed to protect those specific areas that were cut or modified.

(5) Tax and transport for eligible parts or costs.

(6) Labor for installation of or modification to parts eligible for funding.

(E) The total project repower cost may not include charges for the following:

(1) Rudders or propellers.

(2) Steering system.

(3) Sea trials and dry docking.

(4) Paint, coatings, or hull work not directly related to the engine repower.

(5) Tax and transport for ineligible parts or costs.

(6) Labor for installation of or modification to parts ineligible for funding.

(7) Any parts or labor typically included as part of the vessel or engine overhaul, maintenance, repair, or upkeep.

(8) These and other items may be eligible for funding on a case-by-case basis if it can be proven that they are not part of the typical vessel overhaul, repair, upkeep or maintenance and are a necessary part of the engine repower.

(F) All engines replaced as part of a marine vessel repower project must be scrapped, consistent with the requirements of Chapter 3: Section BB.

3. Engine Remanufacture Kit

Engine remanufacture kit projects must meet the following criteria:

(A) A remanufacture kit for a specific vessel type may be certified by the U.S. EPA, IMO, or approved by ARB to meet the requirements of the Commercial Harbor Craft Regulation, but must be surplus to the current in-use requirements of Commercial Harbor Craft Regulation.

(1) Engine remanufacture kits specific to vessels not subject to the in-use requirements of the Commercial Harbor Craft Regulation must meet U.S. EPA Tier 2 marine or Tier 2 nonroad engine emission standards or cleaner (e.g., Tier 3 or higher).

(2) Engine remanufacture kits specific to vessels subject to the in-use requirements of the Commercial Harbor Craft Regulation must be surplus to the current requirements of the regulation.

(B) The applicant must provide a copy of the regulatory compliance letter from ARB (similar to an Executive Order) to the air district demonstrating that the remanufacture kit is compliant with the Commercial Harbor Craft Regulation. Remanufacture kits which reduce NOx only are not eligible for Carl Moyer Program funding.

(C) Remanufacture kit projects have a maximum project life of six years.

(D) If the U.S. EPA Emissions Warranty for the project kit requires fuel injectors to be replaced before the end of the project life, the applicant must replace the injectors with equivalent low-emission injectors. The Carl Moyer Program project cost may include the replacement injectors. The project annual report must include documentation that all required maintenance identified in the U.S. EPA Emissions Warranty (if applicable) is completed on schedule. Maintenance other than replacement of low-emission fuel injectors is not eligible for Carl Moyer Program funding.

4. Retrofits: Retrofits include selective catalytic reduction, diesel oxidation catalysts or diesel particulate filters. A retrofit device must be verified by ARB to reduce emissions from the project engine in order to be eligible for funding. This project type will be considered for funding on a case-by-case basis.

5. New Purchase

New marine vessels with propulsion and auxiliary engines certified to be at least 30 percent cleaner than the applicable NOx emission standard are eligible for Carl Moyer Program funding on a case-by-case basis. While no marine vessel propulsion engines currently are certified as such, engines meeting these emission limits may become commercially available as engine technologies continue to advance.

(A) The incremental cost for a marine vessel new purchase project is the difference between the cost of the cleaner-than-required vessel and the cost of a similar vessel that meets existing standards.

(B) New purchase of a ferry is not eligible for Carl Moyer Program funding due to the ARB Harbor Craft Regulation requirement that new ferries utilize the Best Available Control Technology.

6. Shore Power (Cold Ironing)

(A) Only a port authority, terminal operator, or marine vessel owner may apply to receive Carl Moyer Program funding for a shore power project.

(B) Applications for Carl Moyer Program funding of shore power projects must include a copy of the Initial Terminal Plan, as identified in Section (g) of

the Shore Power Regulation. All subsequent project reports to air districts must include any new or updated Terminal Plans in order to evaluate compliance with the project contract.

(C) The commitment of visits and hours made by the applicant, above those required by the Shore Power Regulation, must be used in the project cost-effectiveness calculation and is required in the contract between the applicant and the air district.

(1) For shore-side funding – The fleet of vessels that have been retrofitted and have the ability to use the port or terminal's shore-side shore power committing to a specific number of visits and hours.

(2) For ship-side funding – The entire fleet roster and all the California ports of harbor the fleet will be visiting. From the locales submitted, the fleet must indicate per location, the number of vessel visits and hours per year the fleet will be utilizing shore-side power.

(CI) Up to 50 percent of the total cost of a shore-side transformer and other equipment between the vessel and shore-side transformer at the port or terminal is eligible for Carl Moyer Program funding. Any costs directly related and necessary to the installation of the eligible equipment may reasonably be included in the total cost, such as labor for installation, and costs of site preparation. Design and engineering costs associated with the transformer and other eligible equipment between the vessel and transformer are considered professional labor costs required to complete the installation and are eligible for funding. All projects must be installed and operational prior to January 1, 2014. Projects at terminals and ports that are not subject to the Shore Power Regulation are not subject to the January 1, 2014 deadline and are eligible for funding at any time.

(1) "Installed and operational" for a shore-side shore power project means that the customized equipment at the port or terminal has been installed and a vessel visit has occurred to demonstrate that the integrated system is operational, prior to January 1, 2014. If the first scheduled vessel visit does not occur until after this date, the project will be considered installed and operational pending the scheduled visits occur as contracted.

(2) Shore-side projects meeting the eligibility criteria of the Goods Movement Program are eligible for Carl Moyer Program funding only on a case-by-case basis. Carl Moyer Program funds cannot be commingled with Proposition 1B Goods Movement Program funds.

(3) Due to the lengthy project lead times required for shore-side shore power projects, the following minimum requirements must be met to consider the project expended:

a. The necessary customized equipment for each location (e.g., port or terminal) has been procured and invoiced. Examples of eligible equipment include a transformer, grounding switches, a service breaker, a capacitor bank, and cranes or booms for cable management that have been customized for installation at the project location.

b. The customized equipment is present on site and ready for installation.

c. Seventy-five percent or more of the Carl Moyer Program-eligible customized equipment costs or total project costs (including costs borne by the applicant or local public utility), whichever is greater, has been paid by the expenditure deadline.

d. The Carl Moyer Program shall not pay for modifications or enhancements made to the shore-side electrical infrastructure needed to bring power to the terminal.

(E) Up to 100 percent of necessary vessel (non-transformer) retrofit costs, specifically required to allow the vessel to plug into shore-side power, are eligible for Carl Moyer Program funding. Up to 50 percent of any necessary transformer costs on board the vessel are eligible for Carl Moyer Program funding.

- Docking at ports or terminals funded by the Proposition 1B Goods Movement Program is not prohibited; however, vessel retrofits funded with Carl Moyer Program funds cannot claim emission reductions resulting from ship visits to ports or terminals during the active Proposition 1B Goods Movement Program contract period.

(F) The Carl Moyer Program shall not pay for energy costs (fuel or electricity), shore power routine maintenance, or labor costs for connection and disconnection of the vessel to shore-side power.

(G) All contracts for Carl Moyer Program funding of shore power projects must include a stipulation that receipt of program funding is contingent on the project being post-inspected and operational. The project contract must include a provision that if the shore power is not used for the total hours committed to in the contract, the project participant shall return the pro-rated contract amount (commensurate with the shortfall in usage) to the air district. If the contract activity is not met, air districts may refer to Chapter 3 Section FF.4. to address this underutilization. However, the contract must include language prohibiting the grantee from obtaining a waiver from the contracted usage, specifically Section FF.4.(D).

(H) Shore power projects have a maximum project life of 20 years. A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(I) Terminals using or intending to use the Equivalent Emission Reduction Option to demonstrate compliance with the Shore Power Regulation may be eligible for Carl Moyer Program funding on a case-by-case basis, if it can be demonstrated that the project shall achieve emission reductions surplus to the rule.

(J) The emissions from vessels using grid power in lieu of auxiliary engines when the vessel is at berth are assumed to be reduced by 90 percent. The emission reductions from a shore-side transformer project are calculated as the total emission reductions from each participating ship. Each ship's emission reductions calculated as: (Ship emission rate * berthing time * power requirements * number of visits * 0.9). Estimated berthing time shall include the time needed to connect and disconnect the vessel to shore power. Ship emission rates and power requirements are included in Appendix D.

Chapter 13: LIGHT-DUTY VEHICLES

This chapter describes the minimum criteria and requirements for Carl Moyer Program light-duty vehicle projects.

A. Projects Eligible for Funding

Two types of light-duty vehicle projects are eligible for Carl Moyer Program funding: voluntary accelerated vehicle retirement (VAVR) and voluntary repair of vehicles (VRV). Air districts may choose either or both projects to administer. The Bureau of Automotive Repair (BAR) also administers vehicle repair and retirement projects under their Consumer Assistance Program (CAP). Both the Carl Moyer Program and CAP projects are administered and operated in a consistent manner but accept vehicles at different times within the Smog Check cycle. Generally, the Carl Moyer Program accepts vehicles that have passed their last Smog Check test while CAP accepts vehicles that have either passed *or* failed their most recent Smog Check test.

1. VAVR: VAVR projects scrap older, more-polluting vehicles earlier than their expected lifetime that are still operational and have a useful remaining life. Two types of VAVR projects are allowed: conventional and high-emitting vehicles.

2. VRV: VRV projects achieve surplus emission reductions by funding repairs that would not have occurred otherwise or by accelerating repairs so they occur early. To qualify, a vehicle must be outside of its biennial Smog Check window and must be identified as a high-emitting vehicle, avoiding the creation of a disincentive for routine vehicle maintenance.

To be eligible for high-emitting vehicle VAVR or VRV projects, a vehicle's Smog Check test must exceed the pass/fail emission standard for the vehicle's model year and class. Vehicles with emissions below the pass/fail standards may still be retired and receive emission reductions through a conventional VAVR project. Retirement of a high-emitting vehicle results in emission reductions above those generated by a conventional program.

B. Maximum Eligible Funding Amounts

Light-duty vehicle retirement projects are subject to the Moyer Program cost-effectiveness threshold and must meet all other relevant criteria in Section D of this chapter. Air districts have the authority to set more stringent project requirements.

C. Regulatory Background

Light-duty vehicle retirement projects are subject to the requirements of the Voluntary Accelerated Vehicle Retirement Regulation (VAVR Regulation), Cal. Code Regs., tit. 13, §§ 2601 et seq. Air districts may choose to act as the enterprise operator in lieu of

contracting out this work to a third party. However, costs incurred by the District to perform the duties of the enterprise operator shall be considered administrative costs.

Light and medium-duty vehicle projects funded through AB923 are authorized by Health and Safety Code Section 44229 which states in subsection (b)(4) that these projects must be in compliance with guidelines adopted by ARB. This chapter constitutes ARB's adopted guidelines for light-duty projects.

D. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program light-duty vehicle projects. All projects must also conform to Chapter 2: General Criteria, as well as the project application, contract, reporting, and other requirements as described in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional or more restrictive requirements to address local concerns.

Vehicle Eligibility Requirements

1. Participation shall be entirely voluntary for vehicle owners.

2. The vehicle must be a diesel or gasoline-powered passenger car or light-duty truck up to 10,000 pounds gross vehicle weight.

3. The vehicle must be currently registered with the Department of Motor Vehicles (DMV) as an operating vehicle and must have been registered for at least 24 consecutive months prior to the date of the sale to a VAVR enterprise or the date of repair to an address, or addresses, within the air district in which the VAVR enterprise or VRV program is operated. Smog Checks must be performed as required by DMV in order for the vehicle to be considered registered. Currently, diesel-powered vehicles are exempt from Smog Check and are not required to pass a Smog Check test to be eligible.

   (A) A vehicle may also be eligible if the owner of the vehicle placed the vehicle in planned non-operational status per Vehicle Code sections 4604 et seq., for up to two months during the 24 month registration period and occurring at least three months immediately prior to its sale to the VAVR enterprise or repair date.

   (B) It may also be eligible if the registration has lapsed for a period not to exceed six months during the previous 24 months and all appropriate registration fees and late penalties have been paid to DMV, provided that the vehicle is registered for at least three months immediately prior to its sale date to a VAVR enterprise or repair date.

4. The vehicle shall be driven to the VAVR enterprise purchase site to be retired or to the VRV repair station for repair under its own power.

5. Vehicles whose emission control systems have been tampered with as defined in Cal Code Regs., tit. 16, § 3340.41.5. are not eligible until such tampering has been completely corrected.

6. Only vehicles identified as potential high emitters through a technology operated in accordance with the VAVR Regulation and approved by ARB are eligible for VRV projects or to receive extra emission reduction credit for VAVR projects. Diesel-powered vehicles are not eligible for high emitting vehicle VAVR or VRV projects.

7. For high-emitting vehicle projects, the vehicle must receive a confirmatory Smog Check test to establish its baseline emissions, and the emissions must exceed the pass/fail emission standard for the model year and vehicle class as defined in Cal Code Regs., tit. 16, §3340.

    (A) Certain vehicles, such as four-wheel and all-wheel drive vehicles, cannot be tested by the Acceleration Simulation Mode (ASM) Smog Check test, for safety or other mechanical reasons. In those limited cases, the Two Speed Idle (TSI) test may be used. The TSI test must be performed in strict compliance with BAR protocols and the emission rate calculation methodology described in "Techniques for Estimating IM240 and FTP Emission Rates from Two-Speed Idle Emissions Concentrations", May 10, 2001, Technical Notes, Bureau of Automotive Repair.

    (B) If a vehicle's emissions are below the ASM pass/fail emission standards, the vehicle is not a high emitter and does not quality for high emitter projects but may be retired for default emission reductions through a conventional VAVR project.

    (C) For pre-1974 model years, the pass/fail emission standards for the 1974 model year may be used to qualifying vehicles for the project.

    (D) Smog Check tests must be full tests and not "fast pass" tests. The test must only be conducted by BAR-licensed technicians according to BAR regulations and procedures and completed as close to the retirement or repair time as reasonably possible.

E. Additional Vehicle Eligibility Requirements for VAVR Only

1. The vehicle to be retired shall not be operating under a Smog Check repair cost waiver or economic hardship extension.

2. If a vehicle volunteered for retirement is within 60 days of its next required Smog Check inspection, the vehicle shall pass the inspection without receiving a repair cost waiver or economic hardship extension prior to acceptance by a VAVR enterprise operator.

3. If a vehicle volunteered for retirement is within 61-90 days of its next required Smog Check inspection, the air district shall verify that the vehicle has not failed a Smog Check inspection during this time frame.

4. The vehicle shall pass functional and equipment eligibility inspections as specified in the VAVR Regulation.

F. Additional Vehicle Eligibility Requirements for VRV Only

1. All repairs must be completed at least 91 days prior to the vehicle's next biennial Smog Check test.

2. Vehicles covered under their manufacturer's warranty period are not eligible. Warranty requirements are found in Cal Code Regs., tit. 13, §§ 1961 and 2035 et seq..

3. Vehicles registered to non-profit organizations, fleets, or businesses are not eligible.

4. A vehicle may only be repaired once in its lifetime through a VRV project.

G. VRV Project Requirements

1. Only emission-related repairs are fundable through a VRV project.

2. To receive emission reduction credit, the repair must bring the vehicle's emissions into compliance with the Smog Check emissions standards for the vehicle's model year and class. If a vehicle's emissions exceed the standards after the repairs, no repair costs are creditable or fundable.

3. The vehicle's legal owner must provide advanced written approval authorizing the diagnosis and all repairs. The owner must be provided a final invoice detailing the cost of parts, labor, and tax for the repair consistent with the Automotive Repair Act.

4. Smog Check technicians and stations must comply with all California laws and regulations governing automotive repairs, and vehicles must only be diagnosed and repaired by Smog Check technicians at Smog Check stations both licensed by BAR.

5. If tampering is discovered during the pre-repair test or diagnosis, the technician must stop the test, diagnosis, or repair and inform the air district of the tampering. Tampered vehicles are not eligible for VRV projects until the tampering is completely corrected.

6. Service technicians must follow a systematic diagnostic approach according to standard industry protocols that obtains relevant data about the vehicle's engine and emission control system based on the type of emission-related Smog Check failure.

   (A) A systematic approach includes a diagnostic routine that provides sufficient data to diagnose and repair emission failures in a cost-effective and efficient manner. Data may include, but not limited to, compression readings, leak down percentages, intake manifold vacuum readings, scan tool data, condition of grounds, other electrical connections along with wiring, oxygen sensor testing, and other industry accepted factory testing procedures. Vehicle manufacturer diagnostic and repair procedures take precedence over generic procedures.

   (B) The diagnosis must ensure that the vehicle's engine is in good mechanical condition before repairing and include an inspection of basic engine operation (i.e., fuel control, individual cylinder contribution, cylinder seal, internal engine noises, oil burning, etc.) and a complete visual inspection. All defects must be noted.

   (C) Diagnostic strategies must maximize emission reductions for repair funds spent. Technicians must not perform diagnostic strategies and repairs that would result in short term or minimal emission reductions.

7. The technician must document all serviceable and defective emission related parts and systems found during the diagnosis and repair process and must provide the documentation to the air district. The air district must retain a copy. An example of a standardized diagnostic form is provided in Figure 13-1. Other tests may be required to completely diagnose emission failures.

8. If a vehicle repair requires catalytic converter replacement, the replacement must either be a new aftermarket catalytic converter certified by ARB for use on OBDII-equipped vehicles or an original equipment manufacturer (OEM) catalytic converter. No used, recycled, salvaged, rebuilt, or remanufactured aftermarket or OEM catalytic converter may be installed under a VRV project.

9. The repair invoice must detail each repair and associated cost, in accordance with all applicable automotive repair laws and regulations, before the invoice is paid.

10. The air district must designate a qualified staff person or third party unaffiliated with the Smog Check station to process disagreements that may arise between the vehicle owner and the repair station. The contact information for that person must be made available to all vehicle owners who participate in the project.

H. Emissions Measured by the Two Speed Idle Test

1. Certain vehicles, such as four-wheel and all-wheel drive vehicles, cannot be tested by the ASM Smog Check for safety or other mechanical reasons. In those limited cases, the TSI test may be used. The TSI test must be performed in strict compliance with BAR protocols and the emission rate calculation methodology described in "Techniques for Estimating IM240 and FTP Emission Rates from Two-Speed Idle Emissions Concentrations," May 10, 2001, Technical Notes, Bureau of Automotive Repair.

2. Consistent with the model's limitations, TSI test results and the BAR protocol may only be used to predict ROG emissions, as the TSI test does not directly measure either PM or NOx. For high emitting vehicles that are retired, default evaporative ROG, NOx, and PM emission reductions may be claimed.

I. Air District Project Plan Requirements

1. An air district shall submit a detailed VAVR and/or VRV project plan to ARB for approval and must receive written approval from ARB's Executive Officer (EO) prior to implementing a VAVR and/or a VRV project. The project must follow the plan, and any substantive changes must be pre-approved by ARB in writing.

2. The air district project plan shall include the following:

   (A) The name, title, and telephone number of the air district project contact.

   (B) An evaluation of environmental justice considerations including, but not limited to, outreach addressing community needs.

   (C) An estimate of the number of vehicles to be retired and/or repaired and an estimate of the cost-effectiveness with all assumptions and calculations used.

   (D) Copies of contracts with VAVR enterprise operations, repair stations, consultants, and any other contractor(s) participating in the project.

   (E) A description of and timetable for monitoring and auditing enterprise operations, repair stations, consultants, and other contractors.

   (F) A copy of the statement of certification that a VAVR enterprise operator has demonstrated compliance with all applicable provisions of the VAVR regulation.

   (G) The protocol for verifying vehicle eligibility including confirmation of compliance with any Smog Check requirements and for informing the public of the availability of vehicles eligible to retire.

(H) A sample of the records that will be required of the VAVR enterprise operator and/or repair stations.

(I) A description of project elements stricter than the ARB minimum requirements.

3. For high emitter programs, the air district project plan shall also include the following:

(A) A detailed description of the operation of the technology including software used to identify high emitting vehicles including, but not limited to, set up, typical operation, location and location criteria, calibration, and maintenance.

(B) A copy of the standard operating procedures for that technology including software maintenance and the criteria to be used to identify a high emitting vehicle with documentation that operating personnel are trained and qualified.

(C) A detailed description of the methodology used to calculate extra emission reductions, including changes to the ARB-recommended method.

(D) If an air district intends to include an evaporative emissions testing element, the plan must specify the test equipment and include a copy of the test protocol.

(E) If an air district intends to include a PM measuring element, the plan must specify the test equipment and include verification that the methodology for measuring PM is scientifically valid, documentation that the results are reproducible, and a complete copy of the methodology.

(F) A scope of work for businesses performing vehicle testing and repairs including the diagnosis and repair protocols for cost-effective and durable repairs. (VRV only)

(G) An itemized breakdown of estimated project costs including, but not limited to, funds allocated to: identifying high emitters; vehicle retirement with the number of vehicles to be retired; vehicle repair with the number of vehicles to be repaired; data analysis; and outreach to and solicitation of vehicle owners.

J. Recordkeeping and Reporting

1. For each vehicle retired or repaired, the air district shall retain the following records for inclusion in the annual report to ARB.

    (A) Vehicle Identification Number and License Plate Number
    (B) Vehicle odometer reading
    (C) Vehicle make and model
    (D) Name, address, and phone number of legal vehicle owner(s)
    (E) Name and business address of the VAVR enterprise operator or repair business
    (F) Emission reductions claimed
    (G) Total air district cost to retire or repair each vehicle
    (H) Date of vehicle purchase and retirement by the enterprise operator (VAVR only)
    (I) Date of repair and amount paid for and nature of each repair (VRV only)
    (J) Pre and post-repair Smog Check test results (VRV only)
    (K) Data identifying vehicles as potential high emitters along with confirmatory Smog Check test results and date of Smog Check test (High Emitter VAVR or VRV)
    (L) Due date of next biennial Smog Check test (VRV only)

2. For VAVR programs, the enterprise operator shall maintain the following records. These records are <u>not</u> required for the annual report but must be made available to ARB for review.

    (A) Reproduction of California Certificate of Title and registration, as signed-off by the seller at time of final sale to the VAVR enterprise.
    (B) Reproduction of the applicable certificate of functional and equipment eligibility.
    (C) Reproduction of the applicable Notice to Dismantler (DMV Registration 42 form).
    (D) Reproduction of written documentation from DMV verifying that a vehicle meets the vehicle registration requirements of ARB's VAVR Regulation.
    (E) If a retired vehicle is within 60 days of its next required Smog Check inspection, a reproduction of documentation that the vehicle passed its Smog Check inspection.

3. Air districts and enterprise operators shall retain these records for the life of the project plus an additional 2 years.

K. Minimum Project Application Requirements

Air districts must ensure project applications include the specific information needed to determine project eligibility and populate the Clean Air Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

L. Offering Vehicles/Parts to the Public (VAVR only)

1. Enterprise operators must inform the air district of the vehicles ready for dismantling, and the air district must provide an easily accessible and detailed description of the vehicles to interested parties including collectors and enthusiasts.

2. The enterprise operator must wait a minimum of 10 days before submitting a Notice to Dismantle to DMV, and if an interested person contacts the enterprise operator, the enterprise operator must hold the vehicle for at least another seven days.

3. Engine, emission-related parts, transmission, and drive train parts must be removed from the vehicle and destroyed after the 10 day waiting period but prior to offering the remaining parts for sale, as defined in the VAVR regulation.

4. If a vehicle or its emission-related or drive train parts are sold instead of retired, no emission reductions will be generated, and no Carl Moyer Program funds may be used for retiring the vehicle; however, non-emission-related and non-drive train parts from the vehicle may be sold at the sole discretion of the enterprise operator.

M. Emission Benefits

Emission reductions from conventional VAVR projects are calculated using the VAVR Regulation methodology. They are equal to the retired vehicle's emission rates minus those of the replacement vehicle with the difference multiplied by the average vehicle miles traveled by light duty vehicles in the year of vehicle retirement and by the three year project life. The retired vehicle's emission rates are equal to those for gasoline-powered, light-duty vehicles for the model year of the retired vehicle in the year of vehicle retirement. Replacement vehicle emissions are the fleet average emissions for all gasoline-powered light-duty vehicles for model years 1990 through the year of vehicle retirement. Emission rates and average vehicle miles traveled are generated by ARB's motor vehicle emissions model. NOx, ROG, CO, and PM emission reductions over the three year project life by vehicle model year are located in Tables 13-1 through 13-7 below. These tables will be updated on an as needed basis through a mail-out to reflect revisions to the motor vehicle emissions model and/or to include additional years.

Table 13-1
Retired Vehicle Emission Reductions, CY 2011 (lbs/3yr)

MY	ROG			CO	NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust	Exhaust
pre 1968	285.7	232.7	518.4	3241.1	176.8	0.72
1968	293.2	236.8	530.0	3328.7	181.3	0.73
1969	300.8	240.0	540.8	3417.6	186.5	0.75
1970	307.4	172.6	480.0	3534.1	192.5	0.77
1971	321.8	169.8	491.5	3543.1	194.6	0.79
1972	336.8	166.6	503.4	3561.3	197.0	0.80
1973	344.7	168.8	513.5	3590.1	198.7	0.82
1974	344.2	134.3	478.5	3515.7	188.9	0.84
1975	290.5	123.5	414.1	3527.3	184.0	1.05
1976	216.3	113.8	330.1	4117.4	193.0	1.15
1977	216.5	92.1	308.6	4165.6	195.9	1.17
1978	122.0	92.8	214.7	2871.5	129.2	1.32
1979	110.5	91.0	201.4	2135.9	119.3	1.42
1980	98.0	69.3	167.3	1855.5	115.6	1.35
1981	83.8	64.8	148.6	1438.5	91.4	1.66
1982	76.4	60.4	136.8	1376.8	92.6	1.64
1983	60.4	57.3	117.7	1176.8	91.4	1.45
1984	57.5	51.1	108.5	1180.4	95.9	1.27
1985	47.6	46.8	94.4	864.0	91.2	1.39
1986	45.2	42.6	87.9	812.2	91.1	1.43
1987	42.4	59.1	101.5	743.9	87.3	1.34
1988	37.0	67.6	104.6	645.9	83.5	1.30
1989	39.9	61.0	101.0	709.4	74.2	1.29
1990	40.4	55.5	95.9	717.8	62.9	1.22
1991	40.7	43.8	84.5	718.9	68.5	1.24
1992	41.0	42.1	83.1	715.0	70.0	1.23
1993	34.5	40.5	75.0	529.2	66.9	1.23
1994	25.8	38.0	63.9	335.1	56.8	1.20
1995	20.9	32.1	53.0	225.3	42.8	1.12
1996	16.1	24.3	40.4	198.7	31.2	1.04
1997	14.4	17.1	31.5	197.1	28.1	0.98
1998	9.3	2.6	11.8	165.3	20.9	0.88
1999	4.5	1.3	5.8	135.2	13.5	0.73
2000	0.1	0.0	0.1	104.4	6.8	0.58

Source: EMFAC2007 V2.3 Nov 1, 2006

Table 13-2
Retired Vehicle Emission Reductions, CY 2012 (lbs/3yr)

MY	ROG			CO	NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust	Exhaust
pre 1969	291.4	233.4	524.8	3300.2	180.0	0.71
1969	298.8	236.6	535.4	3386.1	185.0	0.72
1970	305.3	171.5	476.8	3501.5	191.0	0.74
1971	319.9	168.6	488.5	3511.3	193.0	0.76
1972	335.3	165.3	500.5	3530.9	195.4	0.78
1973	343.2	167.3	510.5	3557.3	197.1	0.79
1974	345.9	134.5	480.4	3496.5	189.4	0.81
1975	292.1	123.7	415.9	3527.6	185.5	1.01
1976	213.9	113.5	327.5	4060.4	190.8	1.11
1977	214.9	92.4	307.2	4112.7	193.9	1.13
1978	120.6	92.9	213.6	2842.1	128.0	1.30
1979	108.9	90.9	199.7	2101.5	118.0	1.39
1980	96.0	68.8	164.8	1819.3	113.9	1.31
1981	82.1	64.4	146.4	1412.6	90.3	1.62
1982	74.1	59.8	133.9	1344.7	91.1	1.61
1983	59.5	56.8	116.3	1159.9	90.8	1.43
1984	56.1	50.6	106.7	1158.2	94.9	1.28
1985	47.2	46.7	93.9	858.0	90.8	1.40
1986	44.6	42.4	87.0	804.6	90.3	1.44
1987	42.1	59.8	101.9	740.6	86.9	1.36
1988	36.8	69.5	106.3	647.3	83.3	1.32
1989	39.1	64.8	103.9	703.9	73.2	1.31
1990	40.6	59.2	99.8	721.8	63.8	1.26
1991	41.0	46.7	87.7	725.2	69.9	1.28
1992	41.4	45.3	86.8	722.5	71.5	1.28
1993	34.9	43.7	78.5	537.6	68.3	1.29
1994	26.3	41.2	67.5	347.1	58.5	1.25
1995	21.6	35.0	56.6	240.0	44.6	1.18
1996	17.1	26.7	43.7	214.9	32.9	1.10
1997	15.3	19.1	34.4	212.4	29.7	1.06
1998	10.2	3.9	14.1	181.1	22.6	0.97
1999	5.4	2.7	8.1	151.8	15.3	0.82
2000	1.2	1.4	2.6	123.3	8.9	0.68

Source: EMFAC2007 V2.3 Nov 1, 2006

Table 13-3
Retired Vehicle Emission Reductions, CY 2013 (lbs/3yr)

MY	ROG			CO	NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust	Exhaust
pre 1970	297.0	233.2	530.2	3357.4	183.6	0.70
1970	303.2	170.3	473.4	3469.1	189.4	0.72
1971	317.8	167.5	485.4	3478.4	191.4	0.73
1972	333.4	164.2	497.6	3498.2	193.7	0.75
1973	341.6	166.1	507.7	3526.0	195.5	0.76
1974	346.6	134.1	480.8	3472.1	189.6	0.78
1975	293.4	123.8	417.2	3523.6	186.7	0.98
1976	211.8	113.0	324.8	4012.7	188.8	1.08
1977	213.4	92.4	305.8	4060.4	192.0	1.10
1978	119.4	93.2	212.6	2816.0	127.0	1.26
1979	107.7	91.2	198.9	2079.8	116.9	1.37
1980	94.9	68.7	163.6	1798.4	113.0	1.29
1981	80.4	64.2	144.6	1388.6	89.2	1.58
1982	72.7	59.3	132.0	1322.2	90.2	1.57
1983	57.5	56.7	114.2	1131.2	89.4	1.40
1984	55.4	50.3	105.6	1143.8	94.3	1.27
1985	46.3	46.7	93.0	846.5	89.8	1.40
1986	44.3	42.1	86.4	800.7	90.0	1.45
1987	41.6	60.5	102.1	735.6	86.4	1.37
1988	36.6	71.1	107.7	647.1	83.0	1.34
1989	38.9	68.5	107.3	704.0	73.2	1.34
1990	39.7	62.9	102.6	715.9	62.9	1.28
1991	41.2	49.7	90.9	730.6	71.1	1.32
1992	41.7	48.5	90.2	729.2	72.9	1.32
1993	35.3	47.1	82.4	547.4	69.9	1.34
1994	26.8	44.6	71.4	359.4	60.1	1.31
1995	22.1	38.1	60.1	252.7	46.2	1.25
1996	17.9	29.3	47.2	229.9	34.6	1.17
1997	16.3	21.2	37.5	228.1	31.4	1.13
1998	11.1	5.2	16.3	196.1	24.2	1.05
1999	6.3	4.0	10.3	167.4	16.9	0.92
2000	2.1	2.7	4.8	139.7	10.7	0.77

Source: EMFAC2007 V2.3 Nov 1, 2006

Table 13-4
Retired Vehicle Emission Reductions, CY 2014 (lbs/3yr)

MY	ROG			NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust
pre 1971	256.7	177.0	433.7	188.9	2.57
1971	258.4	175.1	433.5	192.3	2.64
1972	259.6	173.9	433.4	195.1	2.70
1973	262.9	173.9	436.8	198.2	2.75
1974	258.7	129.1	387.9	195.6	2.81
1975	212.8	118.3	331.0	193.2	3.09
1976	199.9	106.4	306.3	217.0	3.13
1977	209.6	83.2	292.8	229.4	3.08
1978	106.5	83.3	189.8	131.6	3.17
1979	102.1	81.7	183.8	127.1	3.17
1980	101.7	64.8	166.5	130.0	3.08
1981	90.2	60.7	150.9	104.1	1.22
1982	82.0	55.0	137.0	102.5	1.23
1983	69.0	52.8	121.8	103.0	1.20
1984	64.5	45.5	110.0	111.5	1.23
1985	57.0	42.2	99.2	108.8	1.24
1986	53.0	37.8	90.8	108.7	1.27
1987	48.9	43.7	92.5	103.6	1.29
1988	36.5	57.3	93.8	92.3	1.33
1989	38.7	58.1	96.9	79.6	1.33
1990	39.2	71.5	110.7	69.3	1.33
1991	39.9	55.0	95.0	83.6	0.70
1992	41.0	54.1	95.0	87.4	0.71
1993	35.6	52.6	88.1	82.7	0.73
1994	28.9	50.4	79.3	74.4	0.74
1995	23.2	42.7	66.0	57.0	0.74
1996	18.1	33.2	51.4	39.7	0.14
1997	17.2	24.7	41.9	37.9	0.16
1998	12.7	7.8	20.5	30.4	0.16
1999	9.5	6.6	16.1	27.0	0.16
2000	5.3	5.4	10.6	19.5	0.16
2001	4.2	4.1	8.3	17.4	0.16
2002	3.9	2.9	6.8	17.0	0.17

Source: EMFAC2011LDV

Table 13-5
Retired Vehicle Emission Reductions, CY 2015 (lbs/3yr)

MY	ROG			NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust
pre 1972	253.9	175.2	429.2	189.2	2.59
1972	255.3	173.9	429.2	192.1	2.65
1973	258.4	174.4	432.8	195.0	2.70
1974	255.6	130.1	385.7	193.9	2.76
1975	207.6	119.6	327.2	192.2	3.03
1976	191.4	107.4	298.8	209.2	3.08
1977	201.8	83.8	285.6	221.1	3.03
1978	103.9	83.9	187.9	128.5	3.12
1979	99.7	82.3	182.0	124.3	3.12
1980	98.4	65.7	164.1	126.7	3.04
1981	87.5	61.5	149.0	101.8	1.20
1982	80.0	55.5	135.4	100.8	1.21
1983	68.1	52.9	121.0	102.0	1.18
1984	63.8	45.4	109.2	110.7	1.21
1985	56.2	42.4	98.6	108.0	1.22
1986	52.5	37.7	90.2	107.9	1.25
1987	48.7	42.2	90.9	103.9	1.27
1988	36.7	57.5	94.1	93.3	1.32
1989	38.9	60.9	99.8	80.7	1.32
1990	39.4	77.2	116.6	70.7	1.32
1991	40.1	58.8	98.9	85.5	0.69
1992	41.1	58.3	99.4	89.6	0.71
1993	36.0	57.1	93.1	85.4	0.72
1994	30.0	55.1	85.1	78.3	0.74
1995	24.2	47.1	71.4	60.4	0.73
1996	18.9	36.7	55.6	41.8	0.14
1997	17.9	27.5	45.4	40.0	0.16
1998	13.6	9.3	22.9	32.4	0.16
1999	10.5	8.1	18.7	29.1	0.16
2000	6.2	6.9	13.0	21.5	0.16
2001	5.1	5.7	10.7	19.3	0.17
2002	4.7	4.4	9.2	18.8	0.17
2003	3.9	2.9	6.8	18.4	0.17

Source: EMFAC2011LDV

Table 13-6
Retired Vehicle Emission Reductions, CY 2016 (lbs/3yr)

MY	ROG			CO	NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust	Exhaust
pre 1973	199.8	176.5	376.3	2256.1	141.8	2.21
1973	205.0	177.2	382.2	2320.3	146.1	2.28
1974	204.0	136.9	340.8	2354.3	147.3	2.35
1975	165.1	123.8	288.9	2388.5	146.3	2.37
1976	162.4	108.8	271.2	3377.2	182.9	2.43
1977	166.7	87.7	254.4	3577.3	194.7	2.40
1978	77.6	89.4	166.9	2140.6	107.5	2.41
1979	72.9	88.6	161.5	1742.7	102.8	2.44
1980	68.3	82.7	150.9	1602.4	106.1	2.38
1981	58.8	77.5	136.3	1210.8	83.7	0.94
1982	55.2	93.9	149.1	1176.6	84.3	0.95
1983	46.5	118.6	165.1	1032.4	85.0	0.92
1984	46.6	118.3	164.9	1064.0	90.5	0.94
1985	38.9	116.4	155.3	810.3	88.5	0.96
1986	37.3	129.1	166.4	775.2	89.4	0.98
1987	36.3	117.6	153.9	722.0	86.9	1.01
1988	32.0	114.8	146.8	594.2	85.0	1.04
1989	34.0	99.6	133.6	640.2	76.3	1.05
1990	34.7	88.4	123.1	637.4	66.0	1.04
1991	35.3	65.1	100.4	652.0	68.2	0.55
1992	36.2	62.9	99.2	657.0	71.7	0.57
1993	32.1	60.0	92.2	517.3	69.6	0.59
1994	26.8	57.2	84.0	379.2	63.9	0.60
1995	22.7	48.9	71.6	279.8	51.4	0.60
1996	17.8	38.8	56.6	236.7	38.4	0.13
1997	16.7	29.6	46.3	241.2	36.5	0.14
1998	12.7	10.8	23.5	218.6	30.5	0.14
1999	10.0	9.7	19.6	205.4	27.8	0.14
2000	6.2	8.3	14.5	180.7	21.5	0.14
2001	5.3	7.1	12.4	166.5	19.9	0.14
2002	5.0	5.8	10.9	166.1	19.8	0.14
2003	4.3	4.0	8.3	161.2	19.1	0.15

Source: EMFAC2014 V1.0.7

Table 13-7
Retired Vehicle Emission Reductions, CY 2017 (lbs/3yr)

MY	ROG			CO	NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust	Exhaust
pre 1974	201.2	176.3	377.5	2272.1	143.3	2.24
1974	201.3	136.9	338.2	2310.5	144.9	2.30
1975	162.3	124.3	286.6	2343.5	144.6	2.32
1976	161.3	108.2	269.5	3343.0	182.1	2.38
1977	164.7	87.6	252.3	3519.9	192.2	2.36
1978	76.0	89.4	165.3	2095.9	105.4	2.36
1979	71.7	88.6	160.3	1717.1	101.2	2.39
1980	66.8	82.8	149.6	1572.3	103.9	2.34
1981	57.5	77.6	135.1	1184.0	82.0	0.92
1982	54.1	94.2	148.3	1151.8	82.6	0.93
1983	45.6	120.2	165.8	1013.3	83.5	0.90
1984	45.7	119.6	165.3	1043.5	88.9	0.92
1985	38.2	117.7	155.8	795.9	87.1	0.93
1986	36.6	131.0	167.6	762.4	88.1	0.96
1987	35.1	119.7	154.8	704.5	85.0	0.99
1988	31.6	117.4	149.0	589.3	84.3	1.02
1989	33.5	103.6	137.0	631.9	75.7	1.02
1990	34.5	92.9	127.4	632.4	66.4	1.02
1991	35.1	68.0	103.1	649.2	68.7	0.54
1992	36.1	66.2	102.3	654.3	72.3	0.56
1993	32.1	63.8	95.9	518.2	70.4	0.57
1994	26.8	61.4	88.2	383.6	64.8	0.59
1995	23.0	52.7	75.7	286.9	52.7	0.59
1996	18.4	42.0	60.4	245.8	39.7	0.13
1997	17.3	32.4	49.7	250.6	37.8	0.13
1998	13.3	12.3	25.6	226.8	31.7	0.13
1999	10.5	11.2	21.7	213.1	29.0	0.13
2000	6.9	9.9	16.7	189.6	22.8	0.13
2001	6.0	8.7	14.7	177.3	21.4	0.14
2002	5.7	7.4	13.1	176.8	21.1	0.14
2003	4.9	5.6	10.6	172.3	20.5	0.14

Source: EMFAC2014 V1.0.7

1. Emission reductions for diesel-powered vehicles were estimated using a similar methodology. Because of very limited data and only minor differences in emission rates from one year to another, average emission reductions were only estimated for two model year ranges for all four calendar years. Replacement vehicle emission rates were the same as those used for gasoline-powered vehicles. Average NOx, ROG, and PM emission reductions over the three year project life by model year range are located in Tables 13-8 and 13-9. There are no evaporative emission reductions for retiring a diesel-powered vehicle.

Table 13-8
Retired Diesel-Powered Vehicle Emission Reductions*

Model Year Range	Pollutant	CY 2010-2013 (lb/3yr)
Pre 1984	ROG	11.1
	NOx	55.3
	PM	12.4
1984-1992	ROG	10.3
	NOx	43.6
	PM	9.2

* Source: EMFAC2014 V1.0.7

Table 13-9
Retired Diesel-Powered Vehicle Emission Reductions*

Model Year Range	Pollutant	CY 2014-2017 (lb/3yr)
Pre 1984	ROG	11.6
	NOx	53.4
	PM	11.5
1984-1992	ROG	10.8
	NOx	42.8
	PM	8.4

* Source: EMFAC2014 V1.0.7

2. Please refer to Appendix C for a discussion of the methodology for estimating emission reductions and how to calculate cost-effectiveness.

3. Currently, none of the air district retirement programs have components for high emitter, repair, or Low Emission Vehicle (LEV) replacement projects. As such, the data for these special elements has been removed and the light duty vehicle Appendix D deleted to simplify the Guidelines. ARB will provide the methodology for any new plans which include special cases such as high emitter, repair, or LEV replacement.

Figure 13-1

Diagnostic Data Form[1]

WRITE YES (Y), NO (N), OR A READING OR EXPLANATION. DO NOT JUST CHECK A BOX!

CAP ID#	Year / Make / Model	Vehicle License #	Technician #	Date
			Work order #	

Confirm basic engine condition:

Engine condition: Any smoking, knocking, head gasket leaks or any other degraded engine condition(s)? _____

(*As needed*) compression test, cylinder balance test, leak down test results (whichever test was appropriate)

#1 _____ #2 _____ #3 _____ #4 _____ #5 _____ #6 _____ #7 _____ #8 _____

Base timing _____ Total timing advance _____ Coolant Temp _____ Vacuum readings _____

Ignition system:

Overall condition: Are there any misfires? (HC failures) What is the specific component of the ignition system that needs to be replaced / repaired? List below

_____

Fuel pressure within specs? Y/N ___ results_____

Air Injection System: (if applicable) Is the AIS functioning correctly? Y/N___ If no, why _____

EGR system: (if applicable)

Is the system functioning correctly? Y/N ___ Is the valve getting vacuum? Y/N ___

Does the engine stumble/die when the valve is manually raised? Y/N ___ Is the EGR valve defective? Y/N ___

Is system restricted? Y/N ___ Is system plugged? Y/N ___ Other: _____

Are there any Factory Technical Service Bulletins (TSBs), recalls/warranties related to the emission failure? _____

Are any Diagnostic Trouble Code(s) stored? Y/N ___ If Y, are they emission related? If so, record code(s) _____

If the vehicle is OBDI, did you clear the codes? Y/N ____ Did they return? Y/N ____ If the vehicle is OBDII, what is recorded in "Freeze Frame Data"? _____

Is vehicle failing for monitors? Y/N ____ Explain: _____

Oxygen Sensor: Low Voltage: _____mV High Voltage: _____mV Rise time: _____mS

NOTE: Record the min/max/rate of change measured while artificially manipulating the air/fuel mixture full rich & full lean.

Average voltage: _____ Is the O2 sensor functioning correctly? Y/N ___ Explain: _____

Is the vehicle in fuel control? Y/N___ If N, is the O2 biased? Rich Y/N ___ Lean Y/N ___

Will the computer respond to an artificial O2 signal? Y/N ___ If no, why?

_____

What are the fuel trim numbers under test conditions? _____

Cross-reference the failed emission(s) with the related failed test.

Final Diagnosis: What component(s) or system(s) need to be repaired or replaced and why? _____

_____

_____

CATALYTIC CONVERTER DIAGNOSTIC ROUTINE

FACTORY DIAGNOSTIC/TESTING PROCEDURES TAKE PRECEDENCE OVER GENERIC TESTS.

Cat tests are valid or useful to the extent the vehicle is in fuel control. CAT tests require certain conditions be created by upstream systems in order to be valid. Fuel control is not just a varying O2S and/or fuel metering device. Fuel control is defined as the vehicle's ability to control fuel in response to the O2S input signal keeping the air/fuel ratio at 14.7 to 1 (stoichiometric). CAT replacement is generally the last repair approved.

DO NOT REQUEST A CAT WITH OTHER REPAIRS ASSOCIATED WITH ITS EFFICIENCY.

DO NOT REQUEST A CAT ON A VEHICLE THAT IS NOT IN FUEL CONTROL.

RECORD ON THE WORK ORDER "THE VEHICLE IS IN FUEL CONTROL".

O2 snap test CO2 cranking test Pre CAT / Post CAT (intrusive test) Factory specific temperature test

O2% ____ % HC: _____ ppm Pre CAT: _____ Post CAT: _____ temp in _____ temp out _____

CO2: _____ CAT efficiency: _____%

Two CAT tests are more conclusive than one. A generic temperature test alone is not acceptable. Temperature tests are best used to confirm another test. An intrusive test is optional to confirm the effectiveness of the catalyst's reduction portion.

[1] **Source: BAR's training course for licensed Smog Check technicians. Not all fields may be relevant for VRV programs. These tests may not be required for all vehicles. Air districts may design other forms consistent with the content of this form.**

Chapter 14: LAWN AND GARDEN EQUIPMENT REPLACEMENT

This chapter describes the minimum criteria and requirements for Carl Moyer Program Lawn and Garden Equipment (L&GE) replacement projects. L&GE replacement provides a streamlined approach to reduce emissions by replacing existing gasoline lawn mowers with cordless, zero-emission, electric lawn mowers. L&GE replacement provides real emission benefits by providing lawn mower owners the incentivized option of purchasing a cordless, zero-emission lawn mower instead of a higher polluting gasoline lawn mower. Zero-emission lawn mowers are not required by regulation, so the emission benefits are surplus. Carl Moyer Program funds for vouchers are used to offset part of the cost of the replacement electric lawn mower.

A. Projects Eligible for Funding

New Replacement Cordless, Zero-Emission Electric Lawn Mower Purchase: The purchase of a new cordless, zero-emission electric lawn mower to replace the existing gasoline lawn mower that is to be scrapped is eligible for funding under this program.

No emission reductions generated by the Carl Moyer Program shall be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity. Therefore, an electric lawn mower model that generates credits by participating in ARB's zero-emission equipment credit averaging, banking and trading program is not eligible for funding.

B. Maximum Eligible Funding Amounts

The maximum total project funding amount associated with reducing the eligible costs of a L&GE replacement project has been predetermined as $145 per lawn mower.

C. Project Criteria

The project criteria listed below for L&GE replacement projects provide participants; air districts; cordless, zero-emission, electric lawn mower manufacturers and merchants; hazardous waste material disposal companies and recycling companies with the minimum requirements for participating in L&GE replacement. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration, except for the following sections: W. Minimum Project Application Requirements, AA. Project Pre-Inspection, BB. Project Post-Inspection, CC. Project Invoice and Payment, DD. Grantee Annual Reporting, EE. Air district Audit of Projects, FF. Nonperforming Projects; and as noted elsewhere below.

1. General Lawn and Garden Equipment Replacement Criteria

   Except as allowed under Chapter 2, sections L, M and N, an air district may not contribute any additional non-Carl Moyer Program incentive funds towards the

purchase of the individual lawn mower. However, bulk-purchasing discounts from the electric lawn mower manufacturer or merchant are allowed.

2. Participant Requirements

All participants must meet the following requirements to be eligible for funding:

(A) Application Form: To be approved for L&GE replacement funds, the applicant must meet L&GE replacement program requirements and submit an application. Once an application is approved by the air district, the air district will return the application form to the applicant. The applicant must turn in the approved application form with applicant's signature at the location designated by the air district.

(B) California Residence: Participants must reside in California. Applicant certifies this on the application. Air districts may add the requirement that participants reside within the air district.

(C) Own and Operate: The participant must currently own and operate the existing gasoline lawn mower in California. Applicant certifies this on the application form.

(D) Replacement Cordless, Zero-Emission Electric Lawn Mower Operation in California: The participant must intend to own and operate the new replacement cordless, zero-emission electric lawn mower within California for a minimum of thirty-six (36) months from the date of purchase. The applicant verifies this on the application form.

3. Existing Lawn Mower Requirements

All existing lawn mowers must meet the following conditions before a L&GE replacement application will be approved and awarded a voucher.

(A) Operational Gasoline Lawn Mowers: The existing lawn mower must be in operational condition. An operational lawn mower must operate on gasoline, be able to start, move, and have all operational parts. Applicant certifies operability on the application form.

(B) Delivery of the Existing Lawn Mower to the Air District or Air District-specified Facility: The participant must deliver the existing lawn mower to the air district or air district-specified facility. The air district or air district-specified facility can reject the condition of the existing lawn mower if it is deemed inoperative.

4. Replacement Lawn Mower Requirements

All replacement lawn mowers must meet the following requirements before a voucher is awarded to the participant:

(A) New, Cordless, Zero-Emission Electric Lawn Mower: The replacement lawn mower must be a new, cordless, zero-emission electric lawn mower.

(B) Not Used for Credit Generation: Only an electric lawn mower model that does not generate credit or participate in ARB's zero-emission equipment credit averaging, banking and trading program is eligible for funding.

(C) Purchase: The replacement lawn mowers must be purchased from a participating air district, air district-selected third party, participating manufacturer or participating merchant, as chosen by the implementing air district.

5. Air District Requirements

An air district implementing the program must meet the following requirements:

(A) Add addendum to air district's Carl Moyer Program Policies and Procedures: An air district must create an addendum to its current Carl Moyer Program Policies and Procedures (P&P's) describing their program within two (2) months after they begin implementation of the L&GE replacement program. Air districts are not required to submit this addendum to ARB but it must be available to ARB upon request.

(B) Agreements:

(1) An air district must have written agreements with both of the following parties:

a. A hazardous waste materials disposal company.
b. A recycling company.

The agreements can be included as part of the air district's agreements with the same entities for other Carl Moyer Programs. The recycling company and the hazardous waste material company can be the same company.

(2) If an air district is working with one of the following parties:

a. A cordless, zero-emission electric lawn mower manufacturer.
b. A cordless, zero-emission electric lawn mower merchant.

The air district must have a written agreement with that party. The agreement must include the requirements of subsection 6 or 7, as applicable, and Chapter 3: Program Administration, section Z. Minimum Contract Requirements, except for the following subsections: 6. Project Specifications, 7. Maintenance, 9. Reporting, and 11. (A) Repercussions of Nonperformance - equipment operation requirement.

(C) Third Party: An air district may select a third party to manage some of the air district's requirements of the program. If an air district partners with a third party, the air district must enter into an agreement with the third party and update its P&P's to include an example of the agreement. The agreement must state that the third party will comply with all L&GE replacement program requirements. The air district also must train the third party on the L&GE replacement program.

(D) Application: Applications, at a minimum, must have the following information:

(1) Information about the Applicant:

a. Name.
b. Mailing Address (including city, state, zip code).
c. Physical Address (if different from mailing address).
d. Phone Number.
e. Date of Application.

(2) Information about the Applicant's Existing Gasoline Lawn Mower:

a. Manufacturer (if known).
b. Model Year (if known).

(3) Section for the applicant to certify the following information is accurate and true:

a. Existing gasoline lawn mower is operational.
b. Applicant resides in California.
c. Applicant currently owns and operates the gasoline lawn mower in California.
d. From the date of purchase, applicant intends to own and operate the new, cordless, zero-emission electric lawn mower in California.
e. The information provided in the application is true and correct and meets the minimum requirements of the L&GE replacement program.
f. "I understand that an incomplete or illegible application may be immediately rejected, and I will be notified."

g. "I understand as an applicant that incentive programs have limited funds and shall terminate upon depletion of program funding."

(4) A box for the applicant to check to certify the information included in (3) is correct and signify the applicant's agreement with the above statements.

(E) Application Approval: The application approval process consists of the following steps:

(1) Applicant submits application to the air district.

(2) Air district or designated third party reviews and approves application (if appropriate), and returns it to applicant. Application review and approval may be conducted on-site at a lawnmower exchange event.

(3) Applicant turns in application with applicant's signature per subsection C. 2.(A).

(F) Rejected Application: If a submitted application is incomplete or illegible, the air district must reject the application immediately and notify the applicant within five days of receipt. Air districts may follow up with an applicant in order to complete an incomplete or illegible application.

(G) Disbursement Request Requirements: An air district may request Carl Moyer Program funds as these funds become available. In order for an air district to be approved for a disbursement request, the air district must follow Chapter 3: Program Administration, Section G requirements, and also provide the following to ARB:

(1) Verification of board approval to implement the L&GE replacement program for the requested disbursement amount or more; and

(2) An example of at least one cordless, zero-emission electric lawn mower manufacturer or merchant agreement; and

(3) An example of at least one active hazardous waste materials disposal company agreement; and

(4) An example of at least one active recycling company agreement; and

(5) A history (up to five years, if applicable) of previous years of the air district's lawn and garden equipment exchange programs, including the following information:

a. Yearly amount funded.

b. Yearly number of mowers funded.
c. Yearly program administration costs.
d. Cordless, zero-emission electric lawn mower cost breakdown:

1. Amount air district paid to manufacturer.
2. Amount participant pays.
3. Amount air district pays from air district's local funds.
4. Amount of any additional funds.

(H) Operational Condition of Existing Lawn Mower: Air district or air district-specified facility must ensure that each existing lawn mower is in apparently operational condition. The air district or air district-specified facility can reject the existing lawn mower if it is deemed inoperative.

(I) Project Payment: Air districts must include in their P&P's a detailed description of the process through which the air district provides payment to the cordless, zero-emission electric lawn mower manufacturer, merchant and/or applicant.

(J) Merchant Reimbursement Package: Prior to receiving reimbursement, an air district-specified third party, participating manufacturer or participating merchant must submit a reimbursement package to the air district. The following documents should be included in the reimbursement package:

(1) Invoice signed by the applicant that shows the final purchase price less the voucher award. In the case of an online merchant, the invoice does not have to be signed by the applicant.

(2) If a recycling code is used in addition to a voucher in order to purchase the lawn mower, the recycling code.

(3) The name and address of the participant.

(K) Lawn Mower Destruction Documentation: Air districts must collect from their participating Recycling Companies signed receipts that show the number of lawn mowers destroyed.

(L) Audit and Monitoring: Air districts must allow ARB to monitor their L&GE replacement program which may include audits of the air district's implementation of the program.

(M) Meeting Environmental Justice (EJ) Requirements: Air districts with environmental justice requirements shall not apply these requirements to the L&GE replacement application review until after each year of implementation. The air district must then review each project to determine if it helps to meet the air district's EJ requirements. If

EJ requirements have not been met, then other Carl Moyer Program funded projects will need to be used to fulfill this EJ requirement.

(N) Reporting in CARL: For expenditure reporting requirements the following information must be entered into the CARL database:

(1) Total number of lawn mowers exchanged.
(2) Date of the exchange of the final lawn mower.
(3) Total amount of Carl Moyer Program funds liquidated.
(4) Date of liquidation of the final project.
(5) Funding year.

(O) Records Retention: Air districts must retain all records of approved projects for a minimum of three (3) years from the date of issuing the voucher. For rejected projects, air districts must maintain a copy of the application, the rejection letter, and method of notification for three (3) years from the date the application was received.

6. Participating Manufacturer Requirements

Participating manufacturers' agreements must include the following information:

(A) Covered Lawn Mowers: Information about the cordless, zero-emission electric lawn mowers covered by the agreement:

(1) Lawn Mower Model Name.
(2) Lawn Mower Year of Production.
(3) Lawn Mower Cutting Radius.
(4) Lawn Mower Battery Description (Voltage).
(5) Total number of cordless, electric lawn mowers covered by the agreement.
(6) The cost of each cordless, electric lawn mower.
(7) The total contract amount, or total contract amount not to exceed.
(8) The date by which the work shall be completed.
(9) Lawn Mower Warranty Description.

(B) Manufacturer Qualifications: A statement that the manufacturer meets the following minimum qualifications for participation in the L&GE replacement program, and shall continue to meet these qualifications throughout its participation in the L&GE replacement program.

(1) Manufacturer has had a valid business license for a minimum of the last two years.

(2) Manufacturer agrees to allow the air district or ARB to inspect cordless, zero-emission electric lawn mowers or audit program records covered under this Agreement during normal business hours.

(C) Aftermarket Service: A statement that the manufacturer shall provide aftermarket service to customers against defects in materials or workmanship as defined by the Terms and Conditions listed in the product warranty.

(D) Recalls: A statement that as soon as reasonably possible, manufacturer shall notify the air district and individually notify any and all purchasers of equipment through this program of any recall of the lawn mower or any of its constituent parts ordered by contractor or by a government agency.

(E) Air District Does Not Warrant or Endorse Lawn Mowers: A statement that the air district does not warrant or endorse the manufacturer's lawn mowers for any purpose, including materials, workmanship, merchantability or fitness for use. Nothing in the air district/manufacturer contract shall be constituted as a warranty or endorsement.

(F) Averaging, Banking and Trading (ABT) Program Exclusion: A statement that no emission reductions generated by the Carl Moyer Program shall be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity. Therefore, electric lawn mower models included in the agreement are not generating credits by participating in ARB's zero-emission equipment credit averaging, banking and trading program or any similar program.

(G) Return of Funds: A statement that, should the manufacturer fail to show that they are implementing the program consistent with the L&GE replacement program requirements, the manufacturer or merchant shall return to the air district funds in proportion to any loss of emission reductions compared with the projected reductions of the agreement.

7. Participating Merchant Requirements

Participating merchants' agreements must include the following:

(A) Covered Lawn Mowers: Information about the cordless, zero-emission electric lawn mowers covered by the agreement:

(1) Lawn Mower Model Name
(2) Lawn Mower Year of Production
(3) Lawn Mower Cutting Radius
(4) Lawn Mower Battery Description (Voltage)

(5) Estimate of total number of cordless, electric lawn mowers covered by the agreement
(6) The cost of each cordless, electric lawn mower
(7) The total contract amount, or total contract amount not to exceed
(8) The date by which the agreement ends
(9) Lawn Mower Warranty Description

(B) Merchant Qualifications: A statement that the merchant meets the following minimum qualifications for participation in the L&GE replacement program, and shall continue to meet these qualifications throughout its participation in the L&GE replacement program.

(1) Merchant has had a valid business license issued in California for a minimum of the last two years.

(2) Merchant agrees to allow the air district or ARB to inspect cordless, zero-emission electric lawn mowers or audit program records covered under this Agreement during normal business hours.

(C) Invoice: A statement that the merchant shall show on the replacement lawn mower invoice the voucher amount. The voucher does not reduce the purchase price of the lawn mower, but is an incentive to the lawn mower owner that will result in a lower price paid by the participant. The receipt of voucher funds does not lower the base price of the lawn mower nor does it reduce the tax basis of the lawn mower.

(D) Average, Banking and Trading Program Exclusion: A statement that no emission reductions generated by the Carl Moyer Program shall be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity. Therefore, electric lawn mower models included in the agreement are not generating credits by participating in ARB's zero-emission equipment credit averaging, banking and trading program or any similar program.

(E) Return of Funds: A statement that, should the merchant fail to show that they are implementing the program consistent with L&GE replacement program requirements, the manufacturer or merchant shall return to the air district funds in proportion to any loss of emission reductions compared with the projected reductions of the agreement.

8. Participating Recycling Company Requirements

Participating recycling companies' agreements must include the following:

(A) Destruction of Lawn Mowers: A statement that the recycling company shall destroy the lawn mower and engine within 60 days of receipt such that the lawn mower is no longer operable or repairable.

(B) Receipt of Lawn Mower Destruction: A statement that the recycling company shall notify the air district that a lawn mower is destroyed by sending the air district a signed receipt indicating the number of lawn mowers destroyed.

D. Emission Benefits

L&GE replacement provides emission benefits by providing lawn mower owners the incentivized option of purchasing a zero-emission lawn mower instead of a higher polluting gasoline lawn mower. Zero-emission lawn mowers are not required by regulation, so the emission benefits are surplus. Emission reductions are the difference in emissions from a new gasoline lawn mower engine and the emissions of a zero-emission lawn mower for the operational lifetime of the zero-emission lawn mower. The average operational lifetime of a replacement zero-emission lawn mower is estimated to be approximately 10 years. L&GE replacement project emission reductions are shown in Table 14-1 below.

Table 14-1
Gasoline Lawn Mower Emission Reductions (lbs/yr)

Model Year	ROG			NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust
2010	0.290	0.847	1.137	0.071	0.048

APPENDIX A

ACRONYMS

APPENDIX A

ACRONYMS

AAP	Agricultural Assistance Program
AB	Assembly Bill
ABT	Average Banking and Trading
AC	Alternating Current
AECP	Alternative Emission Control Plan
Ah	Amp-hour
APCD	Air Pollution Control District
APCO	Air Pollution Control Officer
APU	Auxiliary Power Unit
AQMD	Air Quality Management District
AQIP	Air Quality Improvement Program
ARB	Air Resources Board
ATCM	Airborne Toxic Control Measure
ATCE	Advanced Travel Center Electrification
AVL	Automatic Vehicle Locator
BACT	Best Available Control Technology
BAR	Bureau of Automotive Repair
bhp	Brake Horsepower
bhp-hr/gal	Brake horsepower-hour per gallon
bhp-hr/yr	Brake horsepower-hour per year
BIT	Biennial Inspection of Terminals
BNSF	Burlington Northern and Santa Fe Railroad
BSFC	Brake specific fuel consumption
C/E	Cost Effectiveness
CAF	Confined Animal Facility
Cal/EPA	California Environmental Protection Agency
CAP	Consumer Assistance Program
CAPCOA	California Air Pollution Control Officers Association
CARL	Clean Air Reporting Log
CCR	California Code of Regulations
CFO	Chief Financial Officer
CGW	Declared Combined Gross Vehicle Weight
CHE	Cargo Handling Equipment
CHP	California Highway Patrol
CI	Compression Ignition
CMP	Carl Moyer Memorial Air Quality Standards Attainment
CNG	Program Compressed Natural Gas
CO	Carbon Monoxide
COG	Council of Governments
CRF	Capital Recovery Factor
DC	Direct Current
DDHS	Diesel Driven Heating System

DECS	Diesel Emission Control Strategy
DMV	Department of Motor Vehicles
DOC	Diesel Oxidation Catalyst
DOE	Department of Energy
DOF	Department of Finance
DOORS	Diesel Off-Road Online Reporting System
DOT	Department of Transportation
DPF	Diesel Particulate Filter
E/S	Electric Standby
EF	Emission Factor
EGR	Exhaust Gas Recirculation
EJ	Environmental Justice
EMFAC	ARB's On-Road Motor Vehicle Emission Inventory
EMU	Model Electronic Monitoring Unit
EO	Executive Order
EQIP	Environmental Quality Incentives Program
ERCs	Emission Reduction Credits
ES	Emission Standards
ESN	Engine Serial Number
EIN	Equipment Identification Number
FBC	Fuel-Borne Catalyst
FCF	Fuel Correction Factor
FEL	Family Emission Limit
FTA	Federal Transit Administration
FTF	Flow-Through Filter
FTP	Federal Test Procedure
FY	Fiscal Year
g	Gram
g/bhp-hr	Gram per brake horsepower-hour
gal	Gallon
gal/yr	Gallons per year
GHG	Greenhouse Gas
GMERP	Goods Movement Emission Reduction Program
GPS	Geographic Positioning System
GSE	Ground Support Equipment
GTL	Gas-to-Liquid
GVW	Declared Gross Vehicle Weight
GVWR	Gross Vehicle Weight Rating
HC	Hydrocarbons
HD	Heavy-Duty
HDDE	Heavy-Duty Diesel Engine
HDT	Heavy-Duty Truck
HDV	Heavy-Duty Vehicle
HEB	Hybrid-Electric Bus
HEP	Head End Power
HHD	Heavy Heavy-Duty

HHDV	Heavy Heavy-Duty Vehicle
hp	Horsepower
hr	Hour
HVAC	Heating, Ventilation and Air Conditioning
IC	Internal Combustion
ICE	Internal Combustion Engine
ILD	Idle Limiting Device
IMO	International Maritime Organization
IPI	Incentive Program Implementation Team
IRP	International Registration Plan
IRS	Internal Revenue Service
ISO	International Standards Organization
ISOR	Initial Statement of Reasons
kW	Kilowatt
lbs.	Pounds
lbs/bhp-hr	Pounds per brake horsepower-hour
lb/gal	Pound per gallon
lb/hp-hr	Pound per horsepower-hour
LGER	Lawn and Garden Equipment Replacement
LDV	Light-Duty Vehicle
LESBP	Lower-Emission School Bus Program
LETRU	Low Emission Transport Refrigeration Unit
LEV	Low Emission Vehicle
LF	Load Factor
LHD	Light Heavy-Duty
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas – commonly called
LSI	Propane Large Spark Ignition
MDO	Marine Diesel Oil
MGO	Marine Gas Oil
MHD	Medium Heavy-Duty
MHDV	Medium Heavy-Duty Vehicle
mi	Mile
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MV Fee	Motor Vehicle Registration Fee
MY	Model Year
NAIC	North American Industry Classification System
NMHC	Non-Methane Hydrocarbons
NFPA	National Fire Protection Association
NOFA	Notice of Funds Available
NOx	Oxides of Nitrogen
OAL	Office of Administrative Law
OBD II	On-Road Diagnostics, Phase II
OEM	Original Equipment Manufacturer
ORVIP	Off-Road Voucher Incentive Program

PG&E	Pacific Gas and Electric
P&P	Policies and Procedures
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter Rural
RAP	District Assistance Program
RFP	Request for Proposals
ROG	Reactive Organic Gas
RSD	Remote Sensing Device
SB	Senate Bill
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCR	Selective Catalytic Reduction
SI	Spark Ignition
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management
SOON	District Surplus Off-Road Opt-in for NOx Program
STD	Standard
SULEV	Super Ultra Low Emission Vehicle
SWCV	Solid Waste Collection Vehicle
TAC	Toxic Air Contaminant
TEU	Twenty-foot Equivalent Unit
TFV	Transit Fleet Vehicle
THC	Total Hydrocarbon
TPD	Tons per day
TRU	Transport Refrigeration Unit
TSE	Truck Stop Electrification
TSI	Two Speed Idle
UB	Urban Bus
ULETRU	Ultra Low Emission Transport Refrigeration Unit
ULEV	Ultra Low Emission Vehicle
UP	Union Pacific Railroad
U.S. EPA	United States Environmental Protection Agency
V	Volt
VAVR	Voluntary Accelerated Vehicle Retirement
VDECS	Verified Diesel Emission Control Strategy
VFD	Variable Frequency Device
VIN	Vehicle Identification Number
VIP	Voucher Incentive Program
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
VRV	Voluntary Repair of Vehicles
VVR	Voluntary Vehicle Repair
YR	Year
ZEB	Zero Emission Bus

APPENDIX B

DEFINITIONS

APPENDIX B

DEFINITIONS

Administrative Funds: State funds allocated to program support and outreach costs directly associated with implementing the program.

Agricultural Crop Preparation Services: For large spark-ignition engine-powered equipment this includes packing houses, cotton gins, nut hullers and processors, dehydrators, feed and grain mills, and other related activities that are consistent with California Code of Regulations, title 13, section 2775.

Air Pollution Control Officer: Air Pollution Control Officer, Executive Director, Executive Officer or designee as determined by each air district.

Airport Ground Support Equipment: Any large spark-ignition engine-powered equipment contained in the 24 categories of equipment included in section B.3. of Appendix 2 of the South Coast Ground Support Equipment Memorandum of Understanding, dated November 27, 2002.

Auxiliary Engine: An auxiliary engine refers to an engine that is not the propulsion engine and whose fuel, cooling, or exhaust systems are an integral part of the equipment or vehicle.

Auxiliary Power Unit: Any device that provides electrical, mechanical, or thermal energy to the primary diesel engine, truck cab, or sleeper berth as an alternative to idling the primary diesel engine.

Barge: A vessel having a flat-bottomed rectangular hull with sloping ends and built with or without a propulsion engine.

Baseline Technology: Technology applied under normal business practices, such as, an engine certified by Air Resources Board (ARB or the Board) to the current emission standards for new purchases; or the existing engine in a vehicle or equipment for replacements, repowers, and retrofits.

California's Goods Movement Trade Corridors: Includes the entirety of the South Coast Air Basin, San Joaquin Valley Air Basin, Sacramento Federal Ozone Nonattainment Area, San Francisco Bay Area Air Basin, San Diego County Air District, Imperial County Air District, and Port Hueneme.

Captive Attainment Area Fleet under Off-Road Compression-Ignition Regulation: A fleet or an identified subpart of the fleet (fleet portion, consistent with, California Code of Regulations, title 13, section 2449(d)) in which all of the vehicles in the fleet or fleet portion operate exclusively within the following counties: Alpine, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Monterey, Plumas, San Benito,

San Luis Obispo, Santa Barbara, Santa Cruz, Shasta, Sierra, Siskiyou, Trinity, Tehama, and Yuba. A fleet or identified fleet portion that operates one or more vehicles outside the counties listed above is not a captive attainment area fleet.

Carl Moyer Program Funds: State funds awarded by ARB to local air districts to implement the Carl Moyer Program, including administrative funds, project funds, and interest earned on the awarded funds. Local funds that are under the air district's budget authority may also qualify as Carl Moyer Program funds as match funds (see Health & Safety Code § 44287(e)); however, certain limitations apply (see Health & Safety Code § 44287(j)). Carl Moyer Program funds are subject to Health and Safety Code requirements (see Health & Safety Code § 44287).

Case–by-Case Determination: A process in which local air districts may request Carl Moyer Program staff to review and approve a project or program element that varies from these 2011 Carl Moyer Program Guidelines. See Chapter 3: Program Administration, Section Y for additional information.

Charter Fishing Vessel: A vessel for hire by the general public, dedicated to the search for and collection of fish for the purpose of general consumption.

Class 1 Freight Railroad: As defined by the Surface Transportation Board (see www.stb.dot.gov). As of July 2010, Union Pacific Railroad (UP), Burlington Northern and Santa Fe Railroad (BNSF), and their subsidiaries are the only Class 1 freight railroads operating in California.

Class 2 Freight Railroad: As defined by the Surface Transportation Board (see www.stb.dot.gov). As of July 2010, there are no Class 2 freight railroads based in California.

Class 3 Freight Railroad: As defined by the Surface Transportation Board (see www.stb.dot.gov). Short-line railroads and military and industrial railroads are generally considered Class 3 freight railroads for the purposes of eligibility.

Class 7 Forklift: A rough terrain forklift truck (pneumatic tires).

Clean Air Reporting Log (CARL): An on-line database tool, maintained by ARB, to assist local air districts with tracking and reporting of projects for purposes of implementing the Carl Moyer Program. CARL is used by local air districts to generate required reports.

Commercial Fishing Vessel: A vessel dedicated to the search for and collection of fish to be sold at market or directly to a purchaser.

Commitment of Funds: A program milestone in which Carl Moyer Program funds have been designated or applied towards an eligible project approved by the air district

board, air district Air Pollution Control Officer, or other delegated authority. See Chapter 3: Program Administration, Section M for additional information.

Crawler Tractor: A tracked off-road tractor equipped with a substantial metal plate, or blade, as opposed to a bucket on a loader. This equipment is commonly referred to as a track mounted bulldozer and is used to push large quantities of soil, sand, rubble, etc., during construction and mining work. The dozing power of the crawler tractor exceeds that of the rubber tired dozer. A ripper, which is a claw-like device, may be attached to the back of a larger dozer.

Crew and Supply Vessel: A self-propelled vessel used for carrying personnel and/or supplies to and from off-shore and in-harbor locations (including, but not limited to, off-shore work platforms, construction sites, and other vessels).

Declared Combined Gross Vehicle Weight Range (CGW): The total unladen weight of the combination of vehicles plus the heaviest load that will be transported by the combination of vehicles (vehicles that pull another vehicle). Declared Combined Gross Vehicle Weight Ranges as defined by Department of Motor Vehicles (DMV) under the Commercial Vehicle Registration Act on DMV form REG 4008.

Declared Gross Vehicle Weight Range (GVW): The weight that equals the total unladen weight of the vehicle plus the heaviest load that will be transported on the vehicle (vehicles that haul a load, but do not pull another vehicle). Declared Gross Vehicle Weight Range as defined by DMV under the Commercial Vehicle Registration Act on DMV form REG 4008.

Dredge: A vessel designed to remove debris or earth from the bottom of waterways. Dredges may be built with or without a propulsion engine.

Earned Interest: Interest earnings generated from Carl Moyer Program funds that were held by the air district in interest-bearing accounts. The interest earned from these funds must be spent on eligible Carl Moyer Program projects or administration. See Chapter 3: Program Administration, Section K for additional information.

Emission Control System: Any device or system employed with engine or piece of equipment that is intended to reduce emissions.

Excavator: An engineering vehicle consisting of an articulated arm (boom, stick), bucket and cab mounted on a pivot (a rotating platform, like a lazy susan) atop an undercarriage with track or wheel.

Excursion Vessel: A self-propelled vessel that transports passengers for purposes including, but not limited to: dinner cruises; harbor, lake, or river tours; scuba diving expeditions; and whale watching tours. Excursion vessels do not include crew and supply vessels, ferries, and recreational vessels.

Executed Contract: A legally binding contract signed by the local air district Air Pollution Control Officer, or other air district designated representative, and the grantee to fund an eligible engine, equipment, or vehicle project that will reduce covered emissions. An executed contract is a program milestone in which parties agree to meet the obligations within the contract by a specified date.

Existing Lawn Mower: A gasoline-fueled, operational lawn mower owned and operated in California by the applicant.

Expend: A program milestone in which the air district has applied a full or partial payment of Carl Moyer Program funds towards a project invoice of an eligible Carl Moyer Program project. See Chapter 3: Program Administration, Section O for additional information.

Farm Equipment (for Off-Road engines under Chapters 7, 8, and 9): Off-road equipment used in agricultural operations as defined in the Regulation for In-Use Off-Road Diesel Vehicles (California Code of Regulations, title 13, § 2449(c)(1)).

Farm Equipment (for Stationary and Portable Agricultural engines under Chapter 10): Agricultural Sources as defined in Health and Safety Code section 39011.5.

Ferry: Any self-propelled vessel or boat or owned, controlled, operated, or managed for public use in transportation of carrying passengers, property or vehicles on scheduled services.

Fleet Average Emission Level: The arithmetic mean of the combined hydrocarbon plus oxides of nitrogen emissions for each piece of applicable large spark-ignition engine powered equipment comprising an operator's fleet. For full definition, see California Code of Regulations, title 13, section 2775.

Forklift: Means electric Class 1 or 2 rider trucks or large spark-ignition engine powered Class 4, 5 or 6 rider trucks as defined by the Industrial Truck Association. Electric Class 3 trucks are not forklifts for the purposes of this chapter. More information can be found at: http://www.osha.gov/dcsp/products/etools/pit/forklift/types/classes.html and http://www.indtrk.org.

Funding Target: The total funds required to meet a program milestone such as contract execution, fund expenditure, and funding cycle liquidation. Funding targets assist in cumulative progress tracking of funds and take into account funds that include regular Carl Moyer Program funds, State Reserve funds, Rural District Assistance Program funds, Carl Moyer voucher program funds, required match funds, interest funds, reallocated funds, recaptured funds, and other relevant funds associated with the Carl Moyer Program.

Funding Year: The designation given to each year that air districts are awarded Carl Moyer Program funds. Carl Moyer Program grant awards were first made in fiscal year

1998 to 1999; therefore, that year is designated as Year 1; fiscal year 1999 to 2000 is Year 2, etc. Each funding year is associated with set times for achieving program milestones such as contract execution, fund expenditure, and fund liquidation.

Funding Year Adjustment: An addition or subtraction to an air district's project and/ or administrative fund amounts in one funding year to account for changes (e.g., recaptured funds, errors) in liquidated funds in an earlier funding year.

Glider Kit: A replacement chassis and cab for on-road heavy-duty vehicles. Glider kits are identified with a vehicle identification number (VIN) starting with the letters "GL".

Gross Vehicle Weight Rating (GVWR): The maximum allowable total weight of a road vehicle and a loaded trailer as established by the vehicle manufacturer. The GVWR is typically found on an information tag or plate permanently affixed to the vehicle.

Harbor Craft: (also called "Commercial Harbor Craft") means any private, commercial, government, or military marine vessel including, but not limited to, passenger ferries, excursion vessels, tugboats, ocean-going tugboats, towboats, push-boats, crew and supply vessels, work boats, pilot vessels, supply boats, fishing vessels, research vessels, United States Coast Guard vessels, hovercraft, emergency response harbor craft, and barge vessels that do not otherwise meet the definition of ocean-going vessels or recreational vessels.

Heavy-Duty Vehicles (HDV): Defined in the following table:

Table B-1
Heavy-Duty Vehicle Classification

Vehicle Classification	GVWR
Light Heavy-Duty (LHD)	8,501 < 14,000 pounds
Medium Heavy-Duty (MHD)	14,001 < 33,000 pounds
Heavy Heavy-Duty (HHD)	33,001 or more pounds

Home Port: The port in which a vessel is registered or permanently based.

Idle-Limiting Device: A device used to reduce the locomotive idling, such as an Automatic Engine Stop-Start, an auxiliary power unit, and a diesel driven heating system.

Incremental Cost: Means the cost of the project less a baseline cost that would otherwise be incurred by the applicant in the normal course of business. Incremental costs may include added lease or fuel costs pursuant to Health and Safety Code section 44283 as well as incremental capital costs.

Industrial Tow Tractor: Means an electric or large spark-ignition engine-powered Class 6 truck as defined by the Industrial Truck Association. They are designed primarily to push or pull non-powered trucks, trailers, or other mobile loads.

Large Fleet under Off-Road Compression Ignition Regulation: A fleet with a total maximum power greater than 5,000 horsepower. A fleet must meet large fleet requirements of the Off-Road Regulations if the total vehicles under common ownership or control would be defined as a large fleet. All fleets owned by the United States, the State of California, or agencies thereof (i.e., an agency in the judicial, legislative, or executive branch of the federal or state government) are considered as a unit whole and must meet the large fleet requirements of the Off-Road Regulation (California Code of Regulations, title 13, § 2449(c)).

Large Fleet under Off-Road Large Spark-Ignition Regulation: An operator's aggregated operations in California of 26 or more pieces of large spark-ignition equipment.

Lawn and Garden Equipment: Equipment used to maintain lawns and gardens. This equipment is generally, but not exclusively, powered by spark-ignition engines. This equipment is traditionally used in applications such as lawn mowers, edgers, trimmers, leaf blowers, and chainsaws. Equipment that does not fall into this category includes golf carts, specialty vehicles, generators, pumps, and other small utility equipment.

Lawn Mower Exchange Event: An occasion where participants' existing gasoline lawn mowers are exchanged for new cordless, zero-emission electric lawn mowers or vouchers for new, cordless, zero-emission electric lawn mowers.

Line-Haul Locomotive: A locomotive typically powered by a newer engine or engines totaling 4,000 or more horsepower that transports goods between major urban centers.

Liquidate: Funds for a specified fiscal year that have been spent by a district to reimburse grantees for valid and eligible project invoices and district administrative costs. Payments withheld from the grantee by a district until all contractual reporting requirements are met may be excluded from these amounts for the purposes of liquidation.

Match Funds: Funds under an air district's budget authority that will be applied towards eligible Carl Moyer Program projects in accordance with the matching requirements of the program. See Health and Safety Code section 44287(e).

Maximum Grant Amount: The maximum amount of money the grantee is eligible to receive for a cost-effective Carl Moyer Program project.

Medium Fleet under Off-Road Compression Ignition Regulation: A fleet with total minimum power of greater than 2,500 horsepower and with a total maximum power less than or equal to 5,000 horsepower.

Medium Fleet under Off-Road Large Spark-Ignition Regulation: An operator's aggregated operations in California of 4 to 25 pieces of large spark-ignition equipment.

Mobile Cargo Handling Equipment: Any motorized vehicle used to handle cargo delivered by ship, train, or truck such as yard trucks, rubber tired gantry cranes, top picks, dozers, and excavators.

New Purchases: Vehicles or equipment certified to optional, lower emission standards are fundable.

Non-forklift fleet under Large Spark-Ignition Regulation: An operator's aggregated operations in California of four or more sweeper/scrubbers, industrial tow tractors, or pieces of airport ground support equipment, alone or in combination.

Off-Highway Tractors: Equipment that feature yoke hitches that oscillate four ways to reduce frame stresses. Rugged turn stops prevent excessive wagon rotation in either direction. The rear platform functions as a power train guard providing a safe, stable work area. (These are **not** off-highway trucks (e.g. articulated trucks or rigid haul trucks) which are bulk-handling machines, such as earthmovers or dump trucks, designed to operate on steep or rough terrain and not designed to drive on-highway.)

Off-Road Compression-Ignition Equipment: A vehicle or equipment that is powered by an off-road compression-ignition engine which is any internal combustion engine: in or on a piece of equipment that is self-propelled or serves as a dual purpose by both propelling itself and performing another function and is primarily used off the highways (such as garden tractors, off-highway mobile cranes and bulldozers); or in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to wheels, skids, carrying handles, dolly, trailer, or platform that is consistent with California Code of Regulations, title 13 section 2421.

Off-Road Large Spark Ignition Engine: Means any spark ignition engine that produces a gross horsepower of 25 horsepower or greater (greater than 19 kilowatts for 2005 and later model year) or is designed to produce 25 horsepower or greater (greater than 19 kilowatts for 2005 and later model year) used to propel an off-road piece of equipment. The engine may be designed to use gasoline fuel, liquid petroleum gas (LPG), compressed natural gas, methanol fuel or a combination of these.

Off-Road Large Spark-Ignition Equipment: Equipment that cannot be registered and driven safely on-road or was not designed to be driven on-road. Newer equipment uses engines certified to the off-road spark ignition engine standards. These engines may be designed to use gasoline fuel, liquid petroleum gas (LPG), compressed natural gas, methanol fuel or a combination of these and are most commonly found in forklifts.

Passenger Locomotive: A locomotive that hauls passengers as its primary function.

Pilot Vessel: A vessel designed for, but not limited to, the transfer and transport of maritime pilots to and from oceangoing vessels while such vessels are underway.

Program Milestone: One of several actions (e.g., expenditure) that signify progress or completion of a Carl Moyer Program project towards meeting statutory requirements.

Project Funds: State funds allocated towards eligible project costs (incremental costs) directly associated with the reduction of covered emissions from covered sources.

Propulsion Engine: A marine engine that propels the vessel through the water or directs the direction of the vessel.

Public Fleets: Heavy-duty on-road diesel-fueled vehicles operated by a municipality. A municipality is a city, county, city and county, special district, or a public agency of the State of California, and any department, division, public corporation, or public agency of this State, or two or more entities acting jointly, or the duly constituted body of an Indian reservation or Rancheria.

Reallocation: ARB process for allocating mitigation funds and/or returned funds to eligible air districts. See Chapter 3: Program Administration, Section S for additional information.

Rebuilt or Remanufactured: Engines offered by the original engine manufacturer (OEM) or by a non-OEM rebuilder who demonstrates to ARB that the rebuilt engine and parts are functionally equivalent from an emissions and durability standpoint to the OEM engine and components being replaced.

Recaptured Funds: Project funds that are returned by a grantee to an air district or ARB because that grantee did not meet all of its contractual obligations. Air districts must expend these funds in a newer funding year.

Reduced Technology: Newer technology that is used by the applicant to obtain surplus emission reductions.

Remotely Located Agricultural Engines: Engines located in a federal ambient air quality area that is designated as unclassifiable or attainment for all PM and ozone national ambient air quality standards and that are located more than one-half mile from any residential area, school, or hospital.

Replacement Lawn Mower: A cordless, zero-emission electric lawn mower.

Repower: The replacement of an in-use engine with another engine.

Retrofit: Means an emission control system employed exclusively with an in-use engine, vehicle or piece of equipment.

Returned Funds: Funds returned by a district to ARB for reallocation because they are either not liquidated by the required funding year liquidation deadline, or are associated with an ARB Incentive Program Review mitigation measure.

Rough Terrain Forklift: Class 7 forklifts powered by compression ignition engines and have pneumatic tires that handle uneven surfaces. This includes both straight-mast forklifts and extended-reach forklift, also called telescopic or telehandlers.

Rubber Tired Dozer: A wheeled off-road tractor equipped with a substantial metal plate, or blade as opposed to a bucket on a loader. This equipment is commonly referred to as a rubber tired bulldozer and is used to push large quantities of soil, sand, rubble, etc., during construction and mining work where the traction of a crawler tractor is not required. A ripper, which is a claw-like device, may be attached to the back of a larger dozer.

Rural District Assistance Program: An element of the Carl Moyer Program in which air districts pool their project funds to streamline project outreach, solicitation, and review.

School Bus: Vehicles used for the express purpose of transporting students, kindergarten through grade 12, from home to school, school to home, and to any school sponsored activities.

Shore Power: Electrical power being provided by either the local utility or by distributed generation.

Skid Steer Loader: Very compact and maneuverable off-road tractor that use a bucket on the end of movable arms to lift materials and move material such as dirt, debris, building materials, bulk goods, heavy objects, or snow removal. Unlike conventional loaders, the lift arms are alongside the driver with the pivot points behind the driver's shoulders. Skid steer loaders are used in tight spaces and are quite versatile and can be equipped with a variety of attachments, such as a hammer, augur, trencher, forklift and other attachments (never greater than 120 horsepower (hp), predominantly 40-75 hp). Skid Steer loaders are often utilized to excavate swimming pools and in landscaping residential backyards.

Small Fleet Under Off-Road Compression Ignition Regulation: A fleet with a total maximum power of less than or equal to 2,500 hp that is owned by a business, non-profit organization, or local municipality, or a local municipality fleet in a low population county irrespective of total maximum power, or a non-profit training center irrespective of total maximum power.

Small Fleet (On-Road): A fleet size of three or fewer vehicles as defined in California. Code of Regulations, title 13, section 2025(d)(31)(G).

Solid Waste Collection Vehicle (SWCV): Diesel-fueled vehicles greater than 14,000 pounds GVWR with model year 1960 through 2006 engines used to collect residential and commercial solid waste.

Sweeper/scrubber: A large spark-ignition engine-powered piece of industrial floor cleaning equipment designed to brush and vacuum up small debris and litter and then scrub and squeegee the floor.

Switch Locomotive: A locomotive powered by an engine or engines with less than 2,300 total horsepower, and used to separate and move railcars from track to track or transfer cars to and from regional carriers. All Class 3 railroad locomotives -- including all short-line and military and industrial locomotives -- are considered switch locomotives for the purposes of the Carl Moyer Program.

Tow Boat: Any self-propelled vessel engaged in or intending to engage in the service of pulling, pushing, or hauling alongside barges or other vessels, or any combination of pulling, pushing, or hauling alongside barges or other vessels.

Transit Fleet Vehicle: On-road vehicles operated by a public transit agency, less than 35 feet in length and 33,000 GVWR, but greater than 8,500 GVWR, powered by heavy-duty engines fueled by diesel or alternative fuel; including service vehicles, tow trucks, dial-a-ride buses, paratransit buses, charter buses, and commuter service buses operated during peak commute hours with ten or fewer stops per day.

Truck Stop Electrification: The retrofit of a truck with components such as engine block heaters, fuel heaters, electric heaters or air conditioning for cab/sleeper areas, requiring the installation of charging infrastructure at truck stops and rest areas.

Tug Boat: Any self-propelled vessel engaged in, or intending to engage in, the service of pulling, pushing, maneuvering, berthing, or hauling along side other vessels, or any combination of pulling, pushing, maneuvering, berthing or hauling along side such vessels in harbors, over the open seas, or through rivers and canals. Tug boats generally can be divided into three groups: harbor or short-haul tugboats, ocean-going or long-haul tugboats, and barge tugboats. "Tug boat" is interchangeable with "tow boat" and "push boat" when the vessel is used in conjunction with barges.

Tier 1, 2, and 3 Engines: Engines that are subject to California Code of Regulations, title 13, section 2423(b)(1)(A) and/or Code of Federal Regulations, title 40, part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 1, 2, and 3 Family Emission Limits (FEL) listed in California Code of Regulations, title 13, section 2423(b)(2)(A) and/or Code of Federal Regulations, title 40, part 89.112(d).

Tier 4 Engine: Engines that are subject to the interim or final after-treatment based Tier 4 emission standards in California Code of Regulations, title 13, section 2423(b)(1)(B) and/or Code of Federal Regulations, title 40, part 1039.101. This also

includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in California Code of Regulations, title 13, section 2423(b)(2)(B) and/or Code of Federal Regulations, title 40, part 1039.101.

Uncontrolled Large Spark-Ignition Engines: Means pre-2001 uncertified engines and 2001-2003 certified "non-compliant' large spark-ignition engines.

Urban Bus: A passenger carrying vehicle owned or operated by a public transit agency, powered by a heavy heavy-duty engine, or of a type normally powered by a heavy heavy-duty engine, intended primarily for intra-city operation. The buses are generally greater than 35 feet, and or greater than 33,000 pounds GVWR.

Utility: A privately-owned company that provides the same or similar service for water, natural gas, and electricity as a public utility operated by a municipality.

Verification: Means a determination by the Executive Officer that a retrofit meets the requirements of the Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Engines. More information can be found at this website:
http://www.arb.ca.gov/diesel/verdev/verdev.htm

Workover Rig: Mobile self-propelled rigs used to perform one or more remedial operations on an existing well. The primary function of a workover rig is to act as a hoist so that pipe, sucker rods and down-hole equipment can be run into and out of a well. Operations include deepening, plugging back, or pulling and resetting liners, usually on a producing oil or gas well to try to restore or increase the well's production.

APPENDIX C

COST-EFFECTIVENESS CALCULATION METHODOLOGY

APPENDIX C

COST-EFFECTIVENESS CALCULATION METHODOLOGY

A. Introduction

All projects, with the exception of school bus projects, are subject to the cost-effectiveness limit defined in Appendix G: Cost-Effectiveness Limit and Capital Recovery Factors. School bus funding caps are located in Chapters 4 and 5. Carl Moyer Program (Moyer) funding, air district local AB 923 $2 motor vehicle fees, local air district mitigation fees, other local air district funds and all state funds must be included in determining the cost-effectiveness of surplus emission reductions except for tax credits, tax deductions, public rebates, public loans, local air district penalty funds and public agency applicant funds towards a project. Funding provided by federal programs designed to reduce greenhouse gas (GHG) emissions or funding provided by the Alternative and Renewable Fuel and Vehicle Technology Program to reduce GHG emissions do not need to be included in the cost-effectiveness calculation. Projects that include such funds must meet all other Carl Moyer Program requirements. For more details see Chapter 2 and 3.

B. General Cost-Effectiveness Calculations

1. Calculating Cost-Effectiveness

The cost-effectiveness of a project is determined by dividing the annualized cost of the potential project by the annual weighted surplus emission reductions that will be achieved by the project as shown in Formula C-1 below.

Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions ($/ton)

$$\textit{Cost-Effectiveness (\$/ton)} = \frac{\textit{Annualized Cost (\$/yr)}}{\textit{Annual Weighted Surplus Emission Reductions (tons/yr)}}$$

Directions on how to calculate annual emission reductions and annualized cost are provided in the sections that follow.

2. Determining the Annualized Cost

Annualized cost is the amortization of the one-time incentive grant amount for the life of the project to yield an estimated annual cost. The annualized cost is calculated by multiplying the incremental cost by the capital recovery factor (CRF) from Table G-3. The resulting annualized cost is used to complete Formula C-1 above to determine the cost-effectiveness of surplus emission reductions.

Formula C-2: Annualized Cost ($)

*Annualized Cost = CRF * incremental cost ($)*

3. Calculating the Incremental Cost

Maximum eligible percent funding amounts define incremental cost; in many cases an applicant will provide an estimate of the cost of the reduced technology. The incremental cost is determined by multiplying the cost of the reduced technology by the maximum eligible percent funding amount (from applicable chapter), as described in Formula C-3 below.

Formula C-3: Incremental Cost ($)

*Incremental Cost = Cost of Reduced Technology ($) * Maximum Eligible Percent Funding Amount*

Generally the cost of the baseline vehicle for a new purchase is assumed to be a certain percentage of the cost of a new vehicle meeting reduced emissions from the standard. The cost of the baseline technology for a repower is assumed to be a percentage of the new engine. For retrofits, there is no baseline technology cost; hence the entire cost of the retrofit may be eligible for funding in most cases, but not for on-road. Refer to the On-Road chapter for specific eligible retrofit cost.

For school bus fleet modernization projects, the incremental cost is determined as described in Formula C-4 below.

Formula C-4: Incremental Cost for School Bus Fleet Modernization Projects ($)

*Dollar value on the invoice of the new school bus * 100 percent.*

Use the results from Formula C-3 or C-4 to complete Formula C-2 to determine the annualized cost of a project.

4. Calculating the Annual Weighted Surplus Emission Reductions

Annual weighted emission reductions are estimated by taking the sum of the project's annual surplus pollutant reductions following Formula C-5 below. This will allow projects that reduce one, two, or all three of the covered pollutants to be evaluated for eligibility to receive Carl Moyer Program funding. While oxides of nitrogen (NOx) and reactive organic gases (ROG) emissions are given equal weight, emissions of particulate matter (PM) carry a greater weight in the calculation.

Formula C-5: Annual Weighted Surplus Emission Reductions (tons/yr)

Weighted Emission Reductions =

*NOx reductions (tons/yr) + ROG reductions (tons/yr) + [20 * (PM reductions (tons/yr)]*

The result of Formula C-5 is used to complete Formula C-1 to determine the cost-effectiveness of surplus emission reductions.

In order to determine the annual surplus emission reductions by pollutant, Formula C-15 below must be completed for each pollutant (NOx, ROG, and PM), for the baseline technology and the reduced technology, totaling up to six calculations:

Baseline Technology	Reduced Technology
1. Annual emissions of NOx	4. Annual emissions of NOx
2. Annual emissions of ROG	5. Annual emissions of ROG
3. Annual emissions of PM	6. Annual emissions of PM

These calculations are completed for each pollutant by multiplying the engine emission factor or converted emission standard (found in Appendix D) by the annual activity level and by other adjustment factors as specified for the calculation methodologies presented.

5. Calculating Annual Emission Reductions Based on Usage

Usage: The Carl Moyer Program allows the emission reductions from a project to be calculated using the following activity factors on an annual basis:

(A) Hours of operation,
(B) Fuel consumption, or
(C) Miles traveled.

Specific activity factors allowed for each project category may differ and are identified in the source category chapters of the Carl Moyer Program Guidelines.

(A) Calculating Annual Emission Reductions Based on Hours of Operation

When actual annual hours of equipment operation are the basis for determining emission reductions, the horsepower rating of the engine and an engine load factor found in Appendix D must be used. The method for calculating emission reductions based on hours of operation is described in Formula C-6 below.

Formula C-6: Estimated Annual Emission Reductions based on hours of Operation (tons/yr)

Annual Emissions Reductions =

*Emission Factor or Converted Emission Standard (grams per brake horsepower-hour)(g/bhp-hr)) * Horsepower * Load Factor * Activity (hours(hrs)/yr) * Percent Operation in California (CA) * ton/907,200 grams (g)*

The engine load factor is an indicator of the nominal amount of work done by the engine for a particular application. It is given as a fraction of the rated horsepower of the engine and varies with engine application. For projects in which the horsepower of the baseline technology and reduced technology are different by more than 25 percent, the load factor must be adjusted following Formula C-7 below. It is important to understand the replacement load factor must never exceed 100 percent in cases where the reduced technology engine is significantly smaller than the baseline technology engine.

Formula C-7: Replacement Load Factor

$$\text{Replacement Load Factor} = \text{Load Factor}_{\text{baseline}} * \text{hp}_{\text{baseline}}/\text{hp}_{\text{reduced}}$$

(B) Calculating Annual Emissions Based on Fuel Consumption

When annual fuel consumption is used for determining emission reductions, the equipment activity level must be based on annual fuel usage within California provided by the applicant. Fuel records must be maintained by the engine owner as described in the relevant source category chapter for additional information on this topic.

A fuel consumption rate factor must be used to convert emissions given in g/bhp-hr to units of grams of emissions per gallon of fuel used (g/gal). The fuel consumption rate factor is a number that combines the effects of engine efficiency and the energy content of the fuel used in that engine into an approximation of the amount of work output by an engine for each unit of fuel consumed. The fuel consumption rate factor is found in Table D-24 in Appendix D. Formulas C-8 and C-9 below are the formulas for calculating annual emissions based on annual fuel consumed.

Formula C-8: Estimated Annual Emissions based on Fuel Consumed using Emission Factors or Converted Emission Standard (tons/yr)

Annual Emission Reductions =

*Emission Factor or Converted Emission Standard (g/bhp-hr) * fuel consumption rate factor (bhp-hr/gallon (gal)) * Activity (gal/yr) * Percent Operation in CA * ton/907,200g*

Formula C-9: Estimated Annual Emissions based on Fuel using Emission Factors (tons/yr)

Annual Emission Reductions =

*Emission Factor (g/gal) * Activity (gal/yr) * Percent Operation in CA * ton/907,200g*

(C) Calculating Annual Emissions Based on Annual Miles Traveled

Calculations based on annual miles traveled are used for on-road projects only. Mileage records must be maintained by the engine owner as described in Chapter 4: On-road Heavy-Duty Vehicles.

Calculations Using Emission Factors: There is no conversion since the emission factors for on-road projects provided are given in units of g/mile. Formula C-10 describes the method for calculating pollutant emissions based on emission factors and miles traveled.

Formula C-10: Estimated Annual Emissions based on Mileage using Emission Factors (tons/yr)

Annual Emission Reductions =

*Emission Factor (g/mile) * Activity (miles/yr) * Percent Operation in CA * ton/907,200g*

Calculating Annual Emissions Based on Converted Standards: The unit conversion factor found in Tables D-5 and D-6 (Appendix D) are used to convert the units of the converted emission standard (g/bhp-hr) to g/mile. Formula C-11 describes the method for calculating pollutant emissions using converted emission standards.

Formula C-11: Estimated Annual Emissions based on Mileage using Converted Emission Standards (tons/yr)

Annual Emission Reductions =

*Converted Emission Standard (g/bhp-hr) * Unit Conversion (bhp-hr/mile) * Activity (miles/yr) * Percent Operation in CA * ton/907,200 g*

6. Calculating Two for One Projects

Two for One Projects: For equipment replacement of Two for One Project, two baseline technology equipment will be replaced for one reduced technology. First, calculate the emission reduction benefits based on activity for each baseline engine separately using Formulas C-6, C-8 or C-10. These emission reductions will then be summed together before deducting the emission reduction benefits of the reduced technology using Formula C-13. See the sample calculations supplemental document for an example on this calculation methodology.

7. Calculating Split Project Life Projects

Split Project Life: Split Project Life Projects must use a separate project life for the two baseline technology scenarios. First, Formulas C-6, C-8, or C-10 must be used to calculate emission reduction by pollutant for the two baseline scenarios:

(A) Baseline technology to phase 1 reduced technology
(B) Phase 1 reduced technology to phase 2 reduced technology

Formula C-5 is used to calculate the annual emission reductions for each baseline technology. Next, a fraction of the project life must be applied to the annual emission reductions for each of the baseline scenarios, as outlined below in Formula C-12.

Formula C-12: Split Project Life

Total Annual Weighted Surplus Emission Reductions =
*(Fraction project life / Total project life * Annual weighted surplus emissions from transaction 1) + Fraction project life / Total project life * Annual weighted surplus emissions from transaction 2)*

Total Annual Weighted Surplus Emission Reductions = $(n_1 / t * a_1) + (n_2 / t * a_2)$

n_1 = *fraction project life from transaction 1*
n_2 = *fraction project life from transaction 2*

a_1 = *Annual weighted surplus emissions from transaction 1*
a_2 = *Annual weighted surplus emissions from transaction 2*
t = *total project life*

8. Calculating Annual Surplus Emission Reductions by Pollutant

The final step in this portion of the calculations is to determine the annual surplus emission reductions by pollutant. For new purchases and repower projects, subtract the annual emissions for the reduced technology from the annual emissions for the baseline technology following Formula C-13 below.

Formula C-13: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Repowers and New Purchases

Annual Surplus Emission Reductions (by pollutant) =

Annual Emissions for the Baseline Technology – Annual Emissions for the Reduced Technology

For retrofits, multiply the baseline technology pollutant emissions by the percent of emission reductions that the ARB-verified reduced technology is verified to following Formula C-14 below.

Formula C-14: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Retrofits

Annual Surplus Emission Reductions (by pollutant) =

*Annual Emissions for the Baseline Technology * Reduced Technology Verification Percent*

Calculations must be done for each pollutant, NO_x, PM, and ROG, giving a total of three calculations.

For fleet modernization projects the baseline will be the newer vehicle emissions.

The annual surplus emission reductions by pollutant would be used in Formula C-5 to calculate the annual surplus emission reductions.

9. Calculating a Conversion from Grams to Tons per Year

Conversion to Tons per Year: Since the emission factor or converted standard is given in units of grams, a conversion from grams to tons is also required, as illustrated in Formula C-15 below.

Formula C-15: Estimated Annual Emissions by Pollutant (tons/yr)

Annual Emission Reduction =

*Emission Factor or Converted Emission Standard (g/bhp-hr) * Annual Activity * Adjustment Factor(s) * Percent Operation in CA * ton/907,200g*

10. Calculations for Co-funding Moyer and Other Public Funds

Air districts must request information from grantee to determine what other public financial incentive funds will be used for the project and calculate the maximum Moyer grant amount to insure the applicant does not receive total funds greater than the total project cost. Public agency applicant funds toward a project, tax credits, tax deductions, public rebates, public loans, or local air district penalty fees do not need to be subtracted from the incremental cost. All other public financial incentives, including local air district mitigation funds and other local air district funds, must be deducted from the incremental cost when determining the eligible Moyer grant amount. Formula C-16 below must be used with Formula C-3 for projects with
co-funding from these sources to determine the maximum grant amount based on incremental cost.

Formula C-16: Incremental Cost Limit for Moyer Grant for Grantees receiving other Public Financial Incentive Funds (must be used with Formula C-3 for projects with co-funding)

Maximum Moyer Grant Amount (if cost-effective) =

*Incremental Cost (from Formula C-3) - Other Public Financial Incentive Funds (including tax rebates and credits)**

**Except for tax credits, tax deductions, public rebates, public loans, air district penalty fees.*

In addition to Carl Moyer Program funds, air district local AB 923 funds, local air district mitigation fees, other local air district funds plus any other state funds must be included when calculating cost-effectiveness for the project; the total funds assigned by the air district to co-fund the project plus all state funds must meet current cost-effectiveness limits. Use Formula C-17a below (instead of Formula C-2) to determine the annualized cost for projects with co-funding.

Formula C-17a: Annualized Cost for Grantees receiving Air District Local AB 923 Funds, Local Air Mitigation Funds, Other Local Air District Funds, and/or State Funds (replaces Formula C-2 for projects with co-funding)

Annualized Cost ($) =

> *CRF * [Maximum Moyer Grant Amount (from Formula C-16) + Air District Local AB 923 Funds + Local Air District Mitigation Funds + Other Local Air District Funds + State Funds]*

For projects that include co-funding and the maximum grant amount based on incremental cost plus other district and state funds exceeds the cost-effectiveness limit, Formula C-17b must be used with Formula C-18 to determine the maximum grant amount. The final Moyer grant amount for a project is derived once the state and air district funds are deducted. Use Formula C-17b below to determine the amount of funds the grantee may receive from the Carl Moyer Program.

Formula C-17b: Maximum Moyer Grant for Grantees receiving public funds (must be used with Formula C-18 for projects with co-funding where the maximum grant amount based on incremental cost plus other district and state funds exceeds the cost-effectiveness limit)

Moyer Grant Amount to Grantee =

> *Cost-effective Grant Amount (from Formula C-18) – [Air District Local AB 923 Funds + Local Air District Mitigation Funds + Other Local Air District Funds + State Funds]*

Federal funding from programs that reduce GHG emissions or funding provided by the Alternative and Renewable Fuel and Vehicle Technology Program, or Air Quality Improvement Program, or ARB's Low Carbon Transportation Investment funds to reduce GHG emissions are not required to be included in Formulas C-16, C-17a and C-17b; for more details see Chapter 2 and 3. Public agency applicants are exempt from Formulas C-16, C-17a and C-17b; for more details see Chapter 2 and 3.

11. Calculation for projects exceeding the Cost-Effectiveness Limit

For projects that have exceeded the weighted cost-effectiveness limit, the calculation methodology below must be applied in order to ensure final grant amounts meet the cost-effectiveness limit requirement. Note that school bus projects are subject to cost caps and the separate cost-effectiveness limit provided in Chapter 4. The maximum grant amount is determined by multiplying the maximum allowed cost-effectiveness limit by the estimated annual emission reductions and dividing by the capital recovery factor in the C-18 formula below.

Formula C-18: Maximum Grant Amount for projects exceeding Cost-Effectiveness Limit

Maximum Grant Amount =

*(Cost-effectiveness limit * estimated annual emission reductions)/CRF*

C. List of Formulas

For an easy reference, the necessary formulas to calculate the cost-effectiveness of surplus emission reductions for a project funded through the Carl Moyer Program are provided below.

Formula C-1: Cost-Effectiveness of Weighted Surplus Emission Reductions ($/ton):

$$\text{Cost-Effectiveness (\$/ton)} = \frac{\text{Annualized Cost (\$/yr)}}{\text{Annual Weighted Surplus Emission Reductions (tons/yr)}}$$

Formula C-2: Annualized Cost ($)

Annualized Cost = CRF * incremental cost ($)

Formula C-3: Incremental Cost ($)

Incremental Cost = Cost of Reduced Technology ($) * Maximum Eligible Percent Funding Amount

Formula C-4: Incremental Cost for School Bus Fleet Modernization Projects ($)

Dollar value on the invoice of the new school bus * 100 percent

Formula C-5: Annual Weighted Surplus Emission Reductions

Weighted Emission Reductions =

NO_x reductions (tons/yr) + ROG reductions (tons/yr) + [20 * (PM reductions (tons/yr)]

Formula C-6: Estimated Annual Emissions based on hours of Operation (tons/yr)

Annual Emission Reductions =

Emission Factor or Converted Emission Standard (g/bhp-hr) * Horsepower * Load Factor * Activity (hrs/yr) * Percent Operation in CA * ton/907,200 g

Formula C-7: Replacement Load Factor

Replacement Load Factor = Load Factor $_{baseline}$ * hp $_{baseline}$/hp $_{reduced}$

Formula C-8: Estimated Annual Emissions based on Fuel Consumed using Emission Factors or Converted Emission Standard (tons/yr)

Annual Emission Reductions =

Emission Factor or Converted Emission Standard (g/bhp-hr) * fuel consumption rate factor (bhp-hr/gal) * Activity (gal/yr) * Percent Operation in CA * ton/907,200g

Formula C- 9: Estimated Annual Emissions based on Fuel using Emission Factors (tons/yr)

Annual Emission Reductions =

Emission Factor (g/gal) * Activity (gal/yr) * Percent Operation in CA * ton/907,200g

Formula C-10: Estimated Annual Emissions based on Mileage using Emission Factors (tons/yr)

Annual Emission Reductions =

Emission Factor (g/mile) * Activity (miles/yr) * Percent Operation in CA * ton/907,200g

Formula C-11: Estimated Annual Emissions based on Mileage using Converted Emission Standards (tons/yr)

Annual Emission Reductions =

Converted Emission Standard (g/bhp-hr) * Unit Conversion (bhp-hr/mile) * Activity (miles/yr) * Percent Operation in CA * ton/907,200g

Formula C-12: Split Project Life

Total Annual Weighted Surplus Emission Reductions =

(Fraction project life / Total project life * Annual weighted surplus emissions from transaction 1) + Fraction project life / Total project life * Annual weighted surplus emissions from transaction 2)

Total Annual Weighted Surplus Emission Reductions = $(n_1 / t * a_1) + (n_2 / t * a_2)$

n_1 = fraction project life from transaction 1
n_2 = fraction project life from transaction 2
a_1 = Annual weighted surplus emissions from transaction 1
a_2 = Annual weighted surplus emissions from transaction 2
t = total project life

Formula C-13: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Repowers and New Purchases

Annual Surplus Emission Reductions (by pollutant) =

Annual Emissions for the Baseline Technology – Annual Emissions for the Reduced Technology

Formula C-14: Annual Surplus Emission Reductions by Pollutant (tons/yr) for Retrofits

Annual Surplus Emission Reductions (by pollutant) =

Annual Emissions for the Baseline Technology * Reduced Technology Verification Percent

Formula C-15: Estimated Annual Emissions by Pollutant (tons/yr)

Annual Emission Reduction =

Emission Factor or Converted Emission Standard (g/bhp-hr) * Annual Activity * Adjustment Factor(s) * Percent Operation in CA * ton/907,200g

Formula C-16: Incremental Cost Limit for Moyer Grant for Grantees receiving other Public Financial Incentive Funds

Maximum Moyer Grant Amount (if cost-effective) =

Incremental Cost (from Formula C-3) - Other Public Financial Incentive Funds*

**Except for tax credits, tax deductions, public rebates, public loans, air district penalty fees.*

Formula C-17a: Annualized Cost for Grantees receiving Air District Local AB 923 Funds + Local Air District Mitigation Funds + Other Local Air District Funds + State Funds.

Annualized Cost ($) =

CRF * [Maximum Moyer Grant Amount (from Formula C-16) + Air District Local AB 923 Funds + Local Air District Mitigation Funds + Other Local Air District Funds + State Funds]

Formula C-17b: Moyer Grant for Grantees receiving public funds from Air District

Moyer Grant Amount to Grantee =

Cost-effective Grant Amount (from Formula C-18) – [Air District Local AB 923 Funds + Local Air District Mitigation Funds + Other Local Air District Funds + State Funds]

Formula C-18: Maximum Grant Amount for Projects Exceeding the Cost-Effectiveness Limit

Maximum Grant Amount =

(Cost-effectiveness limit * estimated annual emission reductions)/CRF

APPENDIX D

TABLES FOR EMISSION REDUCTION AND COST-EFFECTIVENESS CALCULATIONS

APPENDIX D

TABLES FOR EMISSION REDUCTION AND COST-EFFECTIVENESS CALCULATIONS

This appendix presents tables summarizing the data needed to calculate the emission reductions and cost-effectiveness of potential projects. Included are data such as engine emission factors, load factors, and other conversion factors used in the calculations discussed in Appendix C: Cost-Effectiveness Calculation Methodology.

	Table #
Heavy-Duty On-Road Projects	D-1 to D-6
Emergency Vehicles	D-9a to D-9b
Off-Road Diesel and Non-Mobile Agricultural (Ag)	D-10 to D-14
Projects Large Spark-Ignition (LSI) Projects	D-15 to D-16
Locomotive Projects	D-17a to D-18
Marine Projects	D-19a to D-23
All Engines – Fuel Consumption	D-24
Reference Tables	D-25 to D-28

Table D-1
Diesel Heavy-Duty Engines
Converted Emission Standards for Fuel Based Usage Calculations

EO Certification Standards g/bhp-hr		NOx	ROG[a]	PM10
		g/gal[b][c][d]		
6.0 NOx	0.60 PM10	103.23	5.33	7.992
5.0 NOx	0.25 PM10	86.03	4.44	3.330
5.0 NOx	0.10 PM10	86.03	4.44	1.332
4.0 NOx	0.10 PM10	68.82	3.55	1.332
2.5 NOx + NMHC	0.10 PM10	40.86	2.11	1.332
1.8 NOx + NMHC	0.01 PM10	29.42	1.52	0.148
1.5 NOx + NMHC	0.01 PM10	24.52	1.27	0.148
1.2 NOx + NMHC	0.01 PM10	19.61	1.01	0.148
0.84 NOx + NMHC	0.01 PM10	13.73	0.71	0.148
0.50 NOx	0.01 PM10	8.60	0.44	0.148
0.20 NOX	0.01 PM10	3.44	0.18	0.148

a - ROG = HC * 1.26639.
b - Fuel based emissions factors were calculated using fuel consumption rate factors from Table D-24.
c - Fuel based factors are for engines less than 750 horsepower only.
d - Emission standards were converted where appropriate, using the NMHC and NOx fraction default values and the ultra low-sulfur diesel fuel correction factors listed in Tables D-25 and D-26, respectively.

Table D-2
Alternative Fuel Heavy-Duty Engines
Converted Emission Standards for Fuel Based Usage Calculations

		g/gal[(b)(c)(d)]		
6.0 NOx	0.60 PM10	111.00	35.14	11.100
5.0 NOx	0.25 PM10	92.50	29.29	4.625
5.0 NOx	0.10 PM10	92.50	29.29	1.850
4.0 NOx	0.10 PM10	74.00	23.43	1.850
2.5 NOx + NMHC	0.10 PM10	37.00	11.71	1.850
1.8 NOx + NMHC	0.01 PM10	26.64	8.43	0.185
1.5 NOx + NMHC	0.01 PM10	22.20	7.03	0.185
1.2 NOx + NMHC	0.01 PM10	17.76	5.62	0.185
0.84 NOx + NMHC	0.01 PM10	12.43	3.94	0.185
0.50 NOx	0.01 PM10	9.25	2.93	0.185
0.20 NOX	0.01 PM10	3.70	1.17	0.185

a - ROG = HC * 1.26639.
b - Fuel based emissions factors were calculated using fuel consumption rate factors from Table D-24.
c - Fuel based factors are for engines less than 750 horsepower only.
d - Emission standards were converted where appropriate, using the NMHC and NOx fraction default values listed in Table D-25.

Table D-3
Heavy-Duty Vehicles
14,001-33,000 pounds (lbs) Gross Vehicle Weight Rating (GVWR)
Emission Factors for Mileage Based Calculations (g/mile)[a]

Model Year	Diesel[b]		
	NOx	ROG[c]	PM10
Pre-1987	14.52	0.75	0.695
1987-1990	14.31	0.59	0.755
1991-1993	10.7	0.26	0.409
1994-1997	10.51	0.2	0.226
1998-2002	10.33	0.2	0.249
2003-2006	6.84	0.13	0.157
2007-2009	4.01	0.11	0.017
2007+ (0.21-0.50 g/ bhp-hr NOx)(d)	1.73	0.1	0.017
2010+ (0.20 g/ bhp-hr NOx or cleaner)	0.74	0.09	0.017

a - EMFAC 2011 Zero-Mile Based Emission Factors.
b - Emission factors incorporate the ultra low-sulfur diesel fuel correction factors listed in Table D-26.
c - ROG = HC * 1.26639.
d - Use interpolated values assuming 1.2 g/bhp-hr NOx Standards for 2007-2009 Model Year Grouping and 0.2 g/bhp-hr NOx Standards for 2010+ Model Years.

Table D-4
Heavy-Duty Vehicles
Over 33,000 lbs GVWR
Emission Factors for Mileage Based Calculations (g/mile)[a]

Model Year	Diesel[b]		
	NOx	ROG[c]	PM10
Pre-1987	21.37	1.09	1.247
1987-1990	21.07	0.86	1.355
1991-1993	18.24	0.56	0.562
1994-1997	17.92	0.42	0.365
1998-2002	17.61	0.43	0.403
2003-2006	11.64	0.27	0.254
2007-2009	6.62	0.23	0.028
2007+ (0.21-0.50 g/bhp-hr NOx)[d]	2.88	0.20	0.028
2010+ (0.20 g/bhp-hr NOx or cleaner)	1.27	0.19	0.028

a - EMFAC 2011 Zero-Mile Based Emission Factors.
b - Emission factors incorporate the ultra low-sulfur diesel fuel correction factors listed in Table D-26.
c - ROG = HC * 1.26639.
d - Use interpolated values assuming 1.2 g/bhp-hr NOx Standards for 2007-2009 Model Year Grouping and 0.2 g/bhp-hr NOx Standards for 2010+ Model Years.

Table D-5
Diesel Urban Buses Converted
Emission Standards

EO Certification Standards[f] g/hbp-hr		NOx	ROG[a]	PM10	NOx	ROG[a]	PM10
		g/mile[b]			g/gal[c][d][e]		
6.0 NOx	0.6 PM10	22.32	1.15	1.73	103.23	5.33	7.99
5.0 NOx	0.1 PM10	18.60	0.96	0.29	86.03	4.44	1.33
5.0 NOx	0.07 PM10	18.60	0.96	0.20	86.03	4.44	0.93
4.0 NOx	0.05 PM10	14.88	0.77	0.14	68.82	3.55	0.67
2.5 NOx + NMHC	0.05 PM10	8.84	0.46	0.14	40.86	2.11	0.67
1.20 NOx	0.01 PM10	4.46	0.23	0.03	20.65	1.07	0.15
0.20 NOx	0.01 PM10	0.74	0.04	0.03	3.44	0.18	0.15

a - ROG = HC * 1.26639.
b - Mileage based emissions factors were calculated using conversion factors from Table D-28.
c - Fuel based emissions factors were calculated using fuel consumption rate factors from Table D-24. d - Fuel based factors are for engines less than 750 horsepower only.
e - Emission standards were converted where appropriate, using the NMHC and NOx fraction default values listed in Table D-25.
f - No diesel buses have been certified to the 0.5 g/bhp/hr for the 2004-2006 model year emission standard.

Table D-6
Natural Gas Urban Buses
Converted Emission Standards

EO Certification Standards g/bhp-hr		NOx	ROG[a]	PM10	NOx	ROG[a]	PM10
		g/mile[b]			g/gal[c][d][e]		
5.0 NOx	0.10 PM10	20.00	6.33	0.40	92.50	29.29	1.85
5.0 NOx	0.07 PM10	20.00	6.33	0.28	92.50	29.29	1.30
4.0 NOx	0.05 PM10	16.00	5.07	0.20	74.00	23.43	0.93
2.5 NOx + NMHC	0.05 PM10	8.00	2.53	0.20	37.00	11.71	0.93
1.8 NOx + NMHC[f][g]	0.02 PM10	5.76	1.82	0.08	26.64	8.43	0.37
1.20 NOx	0.01 PM10	4.80	1.52	0.04	22.20	7.03	0.19
0.20 NOx	0.01 PM10	0.80	0.25	0.04	3.70	1.17	0.19

a - ROG = HC * 1.26639.
b - Mileage based emissions factors were calculated using conversion factors from Table D-28.
c - Fuel based emissions factors were calculated using fuel consumption rate factors from Table D-24. d - Fuel based factors are for engines less than 750 horsepower only.
e - Emission standards were converted where appropriate, using the NMHC and NOx fraction default
values listed in Table D-25.
f - A majority of the natural gas urban buses have been certified to the optional standards. Therefore,
these values are based on the optional standards.
g - Many natural gas urban buses have been certified to optional standards below this level.

Table D-7
Transport Refrigeration Units (TRU) and Auxiliary Power Unit (APU) Default Load Factors - DELETED

Table D-8
TRU and APU Emission Factors (g/bhp-hr) - DELETED

Table D-9a
Emergency Vehicle (Fire Apparatus)
Medium Heavy-Duty Diesel Engine
Converted Emission Standards

Model Year	g/bhp-hr	g/mile[(a)(b)]			g/gallon[(b)(c)(d)]		
	Certification Standard	NOx	ROG[(e)]	PM10	NOx	ROG[(e)]	PM10
pre-1990	6.0 NOx	10.60	0.55	0.821	103.23	5.33	7.992
1990	6.0 NOx	10.04	0.52	0.778	103.23	5.33	7.992
1991 - 1993	5.0 NOx	8.37	0.43	0.324	86.03	4.44	3.330
1994 - 1997	5.0 NOx	8.37	0.43	0.130	86.03	4.44	1.332
1998 - 2001	4.0 NOx	6.70	0.35	0.130	68.82	3.55	1.332
2002 - 2006	2.5 NOx + NMHC	3.98	0.21	0.130	40.86	2.11	1.332
2007 - 2009	1.2 NOx + NMHC	1.91	0.10	0.014	19.61	1.01	0.148
2010+	0.2 NOx	0.33	0.23	0.014	3.44	2.36	0.148

a - Mileage based emissions factors were calculated using conversion factors from Table D-28.
b - Emission standards were converted where appropriate, using the NMHC and NOx fraction default values and the ultra low-sulfur diesel fuel correction factors listed in Tables D-25 and D-26, respectively. c - Fuel based emissions factors were calculated using fuel consumption rate factors from Table D-24. d - Fuel based factors are for engines less than 750 horsepower only.
e - ROG = Hydrocarbons (HC) * 1.26639.

Table D-9b
Emergency Vehicle (Fire Apparatus)
Heavy Heavy-Duty Diesel Engine
Converted Emission Standards

Model Year	g/bhp-hr	g/mile[(a)(b)]			g/gallon[(b)(c)(d)]		
	Certification Standard	NOx	ROG[(e)]	PM10	NOx	ROG[(e)]	PM10
pre-1990	6.0 NOx	17.30	0.89	1.339	103.23	5.33	7.992
1990	6.0 NOx	16.74	0.86	1.296	103.23	5.33	7.992
1991 - 1993	5.0 NOx	13.95	0.72	0.540	86.03	4.44	3.330
1994 - 1997	5.0 NOx	13.49	0.70	0.209	86.03	4.44	1.332
1998 - 2001	4.0 NOx	10.79	0.56	0.209	68.82	3.55	1.332
2002 - 2006	2.5 NOx + NMHC	6.41	0.33	0.209	40.86	2.11	1.332
2007 - 2009	1.2 NOx + NMHC	3.07	0.16	0.023	19.61	1.01	0.148
2010+	0.2 NOx	0.54	0.37	0.023	3.44	2.36	0.148

a - Mileage based emissions factors were calculated using conversion factors from Table D-28.
b - Emission standards were converted where appropriate, using the NMHC and NOx fraction default values and the ultra low-sulfur diesel fuel correction factors listed in Tables D-25 and D-26, respectively. c - Fuel based emissions factors were calculated using fuel consumption rate factors from Table D-24. d - Fuel based factors are for engines less than 750 horsepower only.
e - ROG = HC * 1.26639.

Table D-10
Off-Road Diesel Engines Default Load Factors

Category	Equipment Type	Load Factor
Airport Ground Support	Aircraft Tug	0.54
	Air Conditioner	0.75
	Air Start Unit	0.90
	Baggage Tug Belt	0.37
	Loader Bobtail	0.34
	Cargo Loader	0.37
	Cargo Tractor	0.34
	Forklift	0.36
	Ground Power	0.20
	Unit Lift	0.75
	Passenger Stand	0.34
	Service Truck	0.40
	Other GSE	0.20
		0.34
Agricultural (Mobile, Portable or Stationary)	Agricultural Mowers	0.43
	Agricultural Tractors	0.70
	Balers	0.58
	Combines/Choppers	0.70
	Chippers/Stump Grinders	0.73
	Generator Sets	0.74
	Hydro Power Units	0.48
	Irrigation Pump	0.65
	Shredders	0.40
	Sprayers	0.50
	Swathers	0.55
	Tillers	0.78
	Other Agricultural	0.51
Construction	Air Compressors	0.48
	Bore/Drill Rigs	0.50
	Cement & Mortar Mixers	0.56
	Concrete/Industrial Saws	0.73
	Concrete/Trash Pump	0.74
	Cranes	0.29
	Crawler Tractors	0.43
	Crushing/Process	0.78
	Equipment Excavators	0.38
	Graders	0.41

Table D-10
Off-Road Diesel Engines Default Load Factors
(Continued)

Category	Equipment Type	Load Factor
Construction	Off-Highway Tractors	0.44
	Off-Highway Trucks	0.38
	Pavers	0.42
	Other Paving	0.36
	Pressure Washer	0.30
	Rollers	0.38
	Rough Terrain Forklifts	0.40
	Rubber Tired Dozers Rubber	0.40
	Tired Loaders Scrapers	0.36
	Signal Boards	0.48
	Skid Steer Loaders Surfacing	0.78
	Equipment Tractors/Loaders/	0.37
	Backhoes	0.30
	Trenchers	0.37
	Welders	0.50
	Other Construction	0.45
	Equipment	0.42
Industrial	Aerial Lifts	0.31
	Forklifts	0.20
	Sweepers/Scrubbers	0.46
	Other General Industrial	0.34
	Other Material Handling	0.40
Logging	Fellers/Bunchers	0.71
	Skidders	0.74
Oil Drilling	Drill Rig	0.50
	Lift (Drilling)	0.60
	Swivel	0.60
	Workover Rig (Mobile) Other	0.50
	Workover Equipment	0.60
Cargo Handling	Container Handling Equipment	0.59
	Cranes	0.43
	Excavators	0.57
	Forklifts	0.30
	Other Cargo Handling	0.51
	Equipment Sweeper/Scrubber	0.68
	Tractors/Loaders/Backhoes	0.55
	Yard Trucks	0.65
Other	All	0.43

Table D-11
Uncontrolled Off-Road Diesel Engines
Emission Factors (g/bhp-hr)

Horsepower	Model Year	NOx	ROG	PM10
25 – 49	pre-1988	6.51	2.21	0.547
	1988 +	6.42	2.17	0.547
50 – 119	pre-1988	12.09	1.73	0.605
	1988 +	8.14	1.19	0.497
120+	pre-1970	13.02	1.59	0.554
	1970 – 1979	11.16	1.20	0.396
	1980 – 1987	10.23	1.06	0.396
	1988 +	7.60	0.82	0.274

Table D-12
Controlled Off-Road Diesel Engines
Emission Factors (g/bhp-hr)[a]

Horsepower	Tier	NOx	ROG	PM10
25-49	1	5.26	1.74	0.480
	2	4.63	0.29	0.280
	4 Interim	4.55	0.12	0.128
	4 Final	2.75	0.12	0.008
50-74	1	6.54	1.19	0.552
	2	4.75	0.23	0.192
	3[b]	2.74	0.12	0.192
	4 Interim	2.74	0.12	0.112
	4 Final	2.74	0.12	0.008
75-99	1	6.54	1.19	0.552
	2	4.75	0.23	0.192
	3	2.74	0.12	0.192
	4 Phase-Out	2.74	0.12	0.008
	4 Phase-In/ Alternate	2.14	0.11	0.008
	NOx 4 Final	0.26	0.06	0.008
100-174	1	6.54	0.82	0.274
	2	4.17	0.19	0.128
	3	2.32	0.12	0.112
	4 Phase-Out	2.32	0.12	0.008
	4 Phase-In/ Alternate	2.15	0.06	0.008
	NOx 4 Final	0.26	0.06	0.008
175-299	1	5.93	0.38	0.108
	2	4.15	0.12	0.088
	3	2.32	0.12	0.088
	4 Phase-Out	2.32	0.12	0.008
	4 Phase-In/ Alternate	1.29	0.08	0.008
	NOx 4 Final	0.26	0.06	0.008

Table D-12
Controlled Off-Road Diesel Engines
Emission Factors (g/bhp-hr)[a]
(Continued)

Horsepower	Tier	NOx	ROG	PM10
300-750	1	5.93	0.38	0.108
	2	3.79	0.12	0.088
	3	2.32	0.12	0.088
	4 Phase-Out	2.32	0.12	0.008
	4 Phase-In/ Alternate	1.29	0.08	0.008
	NOx 4 Final	0.26	0.06	0.008
751+	1	5.93	0.38	0.108
	2	3.79	0.12	0.088
	4 Interim	2.24	0.12	0.048
	4 Final	2.24	0.06	0.016

Note: Engines that are participating in the "Tier 4 Early Introduction Incentive for Engine Manufacturers" program per California Code of Regulations, Title 13, section 2423(b)(6) are eligible for funding provided the engines are certified to the final Tier 4 emission standards. The ARB Executive Order indicates engines certified under this provision. The emission rates for these engines used to determine cost-effectiveness shall be equivalent to the emission factors associated with Tier 3 engines.

For equipment with baseline engines certified under the flexibility provisions per California Code of Regulations, Title 13, section 2423(d), baseline emission rates shall be determined by using the previous applicable emission standard or Tier for that engine model year and horsepower rating. The ARB Executive Order indicates engines certified under this provision.

a - Emission factors were converted using the ultra low-sulfur diesel fuel correction factors listed in Table D-27.
b - Alternate compliance option.

Table D-13
Off-Road LSI Equipment Default Load Factors

Category	Equipment Type	Load Factor
Agriculture (Mobile, Portable or Stationary)	Agricultural Tractors Balers	0.62
	Combines/Choppers	0.55
	Chipper/Stump Grinder	0.74
	Generator Sets	0.78
	Sprayers	0.68
	Swathers	0.50
	Pumps	0.52
	Other Agricultural	0.65
	Equipment	0.55
Airport Ground Support	A/C Tug Baggage	0.80
	Tug Belt Loader	0.55
	Bobtail	0.50
	Cargo Loader	0.55
	Forklift	0.50
	Ground Power	0.30
	Unit Lift	0.75
	Passenger Stand	0.50
	Other GSE	0.59
		0.50
Construction	Air Compressors	0.56
	Asphalt Pavers	0.66
	Bore/Drill Rigs	0.79
	Concrete/Industrial Saws	0.78
	Concrete/Trash Pump	0.69
	Cranes	0.47
	Gas Compressor	0.85
	Paving Equipment	0.59
	Pressure Washer	0.85
	Rollers	0.62
	Rough Terrain Forklifts	0.63
	Rubber Tired Loaders Skid	0.54
	Steer Loaders Tractors/	0.58
	Loaders/Backhoes	0.48

Table D-13
Off-Road LSI Equipment Default Load Factors
(Continued)

Category	Equipment Type	Load Factor
Construction	Trenchers	0.66
	Welders	0.51
	Other Construction	0.48
Industrial	Aerial Lifts	0.46
	Forklifts	0.30
	Sweepers/Scrubbers	0.71
	Other Industrial	0.54

Table D-14
Off-Road LSI Engines
Emission Factors (g/bhp-hr)

Horsepower	Fuel	Model Year	NOx	ROG	PM10
25 – 49	Gasoline	Uncontrolled – pre-2004	8.01	3.81	0.060
		Controlled 2001-2006	1.33	0.72	0.060
		Controlled 2007-2009[(a)]	0.89	0.48	0.060
		Controlled 2010+	0.27	0.14	0.060
	Alt Fuel	Uncontrolled – pre-2004	13.00	0.90	0.060
		Controlled 2001-2006	1.95	0.09	0.060
		Controlled 2007-2009[(a)]	1.30	0.06	0.060
		Controlled 2010+	0.39	0.02	0.060
50 – 120	Gasoline	Uncontrolled – pre-2004	11.84	2.66	0.060
		Controlled 2001-2006	1.78	0.26	0.060
		Controlled 2007-2009[(a)]	1.19	0.18	0.060
		Controlled 2010+	0.36	0.05	0.060
	Alt Fuel	Uncontrolled – pre-2004	10.51	1.02	0.060
		Controlled 2001-2006	1.58	0.11	0.060
		Controlled 2007-2009[(a)]	1.05	0.07	0.060
		Controlled 2010+	0.32	0.02	0.060
>120	Gasoline	Uncontrolled – pre-2004	12.94	1.63	0.060
		Controlled 2001-2006	1.94	0.16	0.060
		Controlled 2007-2009[(a)]	1.29	0.11	0.060
		Controlled 2010+	0.39	0.03	0.060
	Alt Fuel	Uncontrolled – pre-2004	10.51	0.90	0.060
		Controlled 2001-2006	1.58	0.09	0.060
		Controlled 2007-2009[(a)]	1.05	0.06	0.060
		Controlled 2010+	0.32	0.02	0.060

a - Emission factors for federally certified engines used in preempt equipment.

Table D-15
Emission Factors for Off-Road LSI Engine Retrofits
Verified to Absolute Emission Number (g/bhp-hr)

Manufacturers of LSI retrofit systems may verify to a percent emission reduction or absolute emissions. If a retrofit system is verified to a percent reduction, the emission factors will be that verified percent of the appropriate emissions factors in Table D-14. If a retrofit system is verified to an absolute emission number, use the following table for the emission factors.

Fuel	Verified Value	NOx	ROG	PM10
Gasoline	3.0 g/bhp-hr	1.78	0.26	0.060
	2.5 g/bhp-hr	1.48	0.22	0.060
	2.0 g/bhp-hr	1.19	0.18	0.060
	1.5 g/bhp-hr	0.89	0.13	0.060
	1.0 g/bhp-hr	0.59	0.09	0.060
	0.6 g/bhp-hr	0.36	0.05	0.060
	0.5 g/bhp-hr	0.30	0.04	0.060
Alt Fuel	3.0 g/bhp-hr	1.58	0.10	0.060
	2.5 g/bhp-hr	1.32	0.09	0.060
	2.0 g/bhp-hr	1.05	0.07	0.060
	1.5 g/bhp-hr	0.79	0.05	0.060
	1.0 g/bhp-hr	0.53	0.03	0.060
	0.6 g/bhp-hr	0.32	0.02	0.060
	0.5 g/bhp-hr	0.26	0.02	0.060

Table D-16
Off-Road LSI Engines Certified to Optional Standards
Emission Factors (g/bhp-hr)

Horsepower	Fuel	Optional Standard	NOx	ROG	PM10
25-50	Gasoline	1.50	0.67	0.36	0.060
		1.00	0.44	0.24	0.060
		0.60	0.27	0.14	0.060
		0.40	0.18	0.10	0.060
		0.20	0.09	0.05	0.060
		0.10	0.04	0.02	0.060
	Alt Fuel	1.50	0.98	0.05	0.060
		1.00	0.65	0.03	0.060
		0.60	0.39	0.02	0.060
		0.40	0.26	0.01	0.060
		0.20	0.13	0.01	0.060
		0.10	0.07	0.00	0.060
50-120	Gasoline	1.50	0.89	0.13	0.060
		1.00	0.59	0.09	0.060
		0.60	0.36	0.05	0.060
		0.40	0.24	0.04	0.060
		0.20	0.12	0.02	0.060
		0.10	0.06	0.01	0.060
	Alt Fuel	1.50	0.79	0.05	0.060
		1.00	0.53	0.03	0.060
		0.60	0.32	0.02	0.060
		0.40	0.21	0.01	0.060
		0.20	0.11	0.01	0.060
		0.10	0.05	0.00	0.060
>120	Gasoline	1.50	0.97	0.08	0.060
		1.00	0.65	0.05	0.060
		0.60	0.39	0.03	0.060
		0.40	0.26	0.02	0.060
		0.20	0.13	0.01	0.060
		0.10	0.06	0.01	0.060
	Alt Fuel	1.50	0.79	0.05	0.060
		1.00	0.53	0.03	0.060
		0.60	0.32	0.02	0.060
		0.40	0.21	0.01	0.060
		0.20	0.11	0.01	0.060
		0.10	0.05	0.00	0.060

LOCOMOTIVES

Table D-17a
Locomotive Emission Factors (g/bhp-hr)
Based on 1998 Federal Standards

Engine Model Year	Type	NOx[(a)]	ROG[(b)]	PM10[(a)]
Pre-1973	Line-haul and Passenger	12.22	0.51	0.275
	Switcher	16.36	1.06	0.378
1973-2001 Tier 0	Line-haul and Passenger	8.93	1.05	0.516
	Switcher	13.16	2.21	0.619
2002-2004 Tier 1	Line-haul and Passenger	6.96	0.58	0.387
	Switcher	10.34	1.26	0.464
2005-2011 Tier 2	Line-haul and Passenger	5.17	0.32	0.172
	Switcher	7.61	0.63	0.206

These factors are to be used for the project baseline emissions if the baseline locomotive is certified or required to be certified to the 1998 federal locomotive remanufacture standards, and for the reduced emission locomotive if the project locomotive is remanufactured to these 1998 standards. Factors are based upon Regulatory Impact Analysis: Final United States Environmental Protection Agency (U.S. EPA) Locomotive Regulation (2008).
a - NOx and PM10 emission factors have been adjusted by a factor of 0.94 and 0.86, respectively, to account for use of California ultra-low sulfur diesel fuel.
b - ROG = HC * 1.053

Table D-17b
Locomotive Emission Factors (g/bhp-hr)
Based on 2008 Federal Standards

Engine Model Year	Type	NOx[(a)]	ROG[(b)]	PM10[(a)]
1973-2001 Tier 0+	Line-haul and Passenger	6.96	0.58	0.189
	Switcher	11.09	2.21	0.224
2002-2004 Tier 1+	Line-haul and Passenger	6.96	0.58	0.189
	Switcher	10.34	1.26	0.224
2005-2011 Tier 2+	Line-haul and Passenger	5.17	0.32	0.086
	Switcher	7.61	0.63	0.112
2011-2014 Tier 3	Line-haul and Passenger	5.17	0.32	0.086
	Switcher	4.70	0.63	0.086
2015 Tier 4	Line-haul and Passenger	1.22	0.15	0.026
	Switcher	1.22	0.15	0.026

These factors are to be used for the project baseline emissions if the baseline locomotive is certified or required to be certified to the new (2008) federal locomotive remanufacture standards, and for the reduced emission locomotive if the project locomotive is remanufactured to the new standards or meets Tier 3 standards. Factors are based upon Regulatory Impact Analysis: Final U.S. EPA Locomotive Regulation (2008).
a - NOx and PM10 emission factors have been adjusted by a factor of 0.94 and 0.86, respectively, to account for use of California ultra-low sulfur diesel fuel.
b - ROG = HC * 1.053

Table D-18
Locomotive Idle-Limiting Device Emission Reduction Factors

Type	Factor
Switchers	0.90
Line-Haul	0.97
Passenger	0.97

Note: Factors based on assumption Idle Limiting Device (ILD) reduces locomotive engine idling by 50 percent. Multiply total baseline emissions by this factor to determine reduced emissions with ILD.

Table D-19a
Uncontrolled Harbor Craft Propulsion Engine
Emission Factors (g/bhp-hr)

Horsepower	Model Year	NOx	ROG	PM10
25-50	All	7.57	1.32	0.520
51-120	pre-1997	14.27	1.04	0.575
	1997+	9.70	0.71	0.524
121-250	pre-1971	15.36	0.95	0.527
	1971-1978	14.27	0.79	0.451
	1979-1983	13.17	0.72	0.376
	1984+	12.07	0.68	0.376
251+	pre-1971	15.36	0.91	0.506
	1971-1978	14.27	0.76	0.431
	1979-1983	13.17	0.68	0.363
	1984-1994	12.07	0.65	0.363
251-750	1995+	8.97	0.49	0.260
751+	1995+	12.07	0.60	0.363

Table D-19b
Controlled Harbor Craft Propulsion Engine
Emission Factors (g/bhp-hr)

Horsepower	Tier	NOx	ROG	PM10
25-50	1	6.93	1.30	0.580
	2	5.04	1.30	0.240
	3	5.04	1.30	0.176
51-120	1	6.93	0.71	0.524
	2	5.04	0.71	0.240
	3	5.04	0.71	0.176
121-175	1	8.97	0.49	0.290
	2	4.84	0.49	0.176
	3	3.60	0.49	0.077
176-750	1	8.97	0.49	0.290
	2	4.84	0.49	0.120
	3	3.87	0.49	0.068
751-1900	1	8.97	0.49	0.290
	2	5.24	0.49	0.160
	3	3.87	0.49	0.068
1901 +	1	8.97	0.49	0.290
	2	5.24	0.49	0.160
	3	4.14	0.49	0.085

Table D-20a
Uncontrolled Harbor Craft Auxiliary Engine
Emission Factors (g/bhp-hr)

Horsepower	Model Year	NOx	ROG	PM10
25-50	all	6.42	1.58	0.460
51-120	pre-1997	12.09	1.23	0.508
	1997+	8.14	0.85	0.417
121-250	pre-1971	13.02	1.13	0.466
	1971-1978	12.09	0.94	0.399
	1979-1983	11.16	0.86	0.333
	1984-1995	10.23	0.82	0.333
	1996+	7.75	0.59	0.255
251-750	pre-1971	13.02	1.08	0.448
	1971-1978	12.09	0.90	0.381
	1979-1983	11.16	0.81	0.321
	1984-1994	10.23	0.77	0.321
	1995+	7.60	0.58	0.230
751 +	pre-1971	13.02	1.08	0.448
	1971-1978	12.09	0.90	0.381
	1979-1986	11.16	0.81	0.321
	1987-1998	10.23	0.72	0.321
	1999+	7.75	0.58	0.255

Table D-20b
Controlled Harbor Craft Auxiliary Engine
Emission Factors (g/bhp-hr)

Horsepower	Tier	NOx	ROG	PM10
25-50	1	6.54	1.54	0.511
	2	5.04	1.54	0.240
	3	5.04	1.54	0.176
51-120	1	6.93	0.85	0.464
	2	5.04	0.85	0.240
	3	5.04	0.85	0.176
121-175	1	6.93	0.58	0.255
	2	4.84	0.58	0.176
	3	3.60	0.58	0.077
176-750	1	6.93	0.58	0.255
	2	4.84	0.58	0.120
	3	3.78	0.58	0.068
751-1900	1	6.93	0.58	0.255
	2	5.24	0.58	0.160
	3	3.87	0.58	0.068
1901 +	1	6.93	0.58	0.255
	2	5.24	0.58	0.160
	3	4.14	0.58	0.085

Table D-21
Harbor Craft Load Factors

Vessel Type	Propulsion Engine	Auxiliary Engine
Charter Fishing	0.52	0.43
Commercial Fishing	0.27	
Ferry/Excursion	0.42	
Pilot	0.51	
Tow	0.68	
Work	0.45	
Other	0.52	
Barge/Dredge	0.45	0.65
Crew & Supply Tug	0.38	0.32
	0.50	0.31

Table D-22
Shore Power
Default Emission Rates (Grams per kilowatt-hour (g/kW-hr))

Pollutant	Emission Rate
NOx	13.9
ROG	0.49
PM10 (marine gas oil fuel with 0.11-0.5 % sulfur content)	0.38
PM10 (marine gas oil fuel with <= 0.10 % sulfur content)	0.25

Table D-23
Shore Power
Default Power Requirements

Ship Category	Ship Size / Type Default (Twenty-foot Equivalent Unit (TEU))	Power Requirement (kW)
Container Vessel	<1,000	1,000
	1,000 – 1,999	1,300
	2,000 – 2,999	1,600
	3,000 – 3,999	1,900
	4,000 – 4,999	2,200
	5,000 – 5,999	2,300
	6,000 – 6,999	2,500
	7,000 – 7,999	2,900
	8,000 – 9,999	3,300
	10,000 – 12,000	3,700
Passenger Vessel	No Default Value – Use Actual Power Requirement[(a)]	
Reefer	Break Bulk	1,300
	Fully containerized	3,300

a - The average power requirement for passenger vessels is 7,400 kW (ARB Oceangoing Vessel Survey, 2005).

Table D-24
Fuel Consumption Rate Factors (bhp-hr/gal)

Category	Horsepower/Application	Fuel Consumption Rate
Non-Mobile Agricultural Engines	ALL	17.5
Locomotive	Line Haul and Passenger (Class I/II)	20.8
	Line Haul and Passenger (Class III)	18.2
	Switcher	15.2
Other	< 750 hp	18.5
	≥ 750 hp	20.8

REFERENCES

The information in these tables has already been incorporated into the preceding emission factor tables. These tables are included for informational purposes.

Table D-25
Pollutant Fractions
NOx+NMHC
Standards

Diesel Engines		Alternative Fuel Engines	
NOx	NMHC	NOx	NMHC
0.95	0.05	0.80	0.20

Table D-26
Fuel Correction Factors
On-Road Diesel Engines

Model Year	NOx	PM10	HC
Pre- 2007	0.93	0.72	0.72
2007+	0.93	0.80	0.72

Table D-27
Fuel Correction Factors
Off-Road Diesel Engines

Model Year	NOx	PM10
Pre-Tier 1	0.930	0.720
Tier 1+	0.948	0.800

Table D-28
Conversion Factors for NOx, ROG and PM10
Heavy-Duty Vehicle Projects (bhp-hr/mile)

Model Year	Medium Heavy-Duty 14,001-33,000 lbs	Heavy Heavy-Duty 33,000 lbs +	Urban Bus 33,000 lbs +
Pre-1989	1.9	3.1	4.0
1990 - 1993	1.8	3.0	4.0
1994 - 1995	1.8	2.9	4.0
1996+	1.8	2.9	4.0

APPENDIX E

DESCRIPTION OF CERTIFICATION AND VERIFICATION EXECUTIVE ORDERS

APPENDIX E

DESCRIPTION OF CERTIFICATION AND VERIFICATION EXECUTIVE ORDERS

A. New Engine Certification

Air Resources Board (ARB or the Board) certifies engines destined for sale in California and provides the engine manufacturers with an Executive Order (EO) for each certified engine family. All new engines used in Carl Moyer Program (CMP) projects must be certified. Federally preempted engines must be certified by the United States Environmental Protection Agency (U.S. EPA) and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification by ARB is considered certified.

An example of an EO is shown in Figure E-1. The EO includes general information about the certified engine such as engine family, displacement, horsepower rating(s), intended service class, and emission control systems. It also shows the applicable certification emission standards as well as the average emission levels measured during the actual certification test procedure. For the purpose of the Carl Moyer Program, the certification emission standards are used to calculate emission reductions. The certification emission standards are shown in the row titled "STD" under the respective "FTP" column headings for each pollutant. For instance, the 11.9 liter diesel engine illustrated in Figure E-1 was certified to oxides of nitrogen (NOx) emission standard of 0.2 grams per brake horsepower-hour (g/bhp-hr), a carbon monoxide (CO) emission standard of 15.5 g/bhp-hr, and a particulate matter (PM) emission standard of 0.01 g/bhp-hr.

In the case where an EO shows emission values in the rows labeled "AVERAGE STD" and/or "FEL", the engine is certified for participation in an averaging, banking, and trading (AB&T) program. AB&T engines (i.e., all family emission limit (FEL)-certified engines) are not eligible to participate in the CMP for new vehicle purchase projects since emission benefits from an engine certified to an FEL level are not surplus emissions.

New locomotive and marine engines are not certified by ARB; they are instead certified by the U.S. EPA. The U.S. EPA provides a Certificate of Conformity for each certified engine family. Figure E-2 is an example of a certificate of conformity for a locomotive remanufacture kit, and figure E-3 shows an example of a certificate for a new locomotive. Certificates of conformity for marine engines are similar.

Figure E-1
Example of an ARB Executive Order for Heavy-Duty On-Road Engines

California Environmental Protection Agency
AIR RESOURCES BOARD

EXECUTIVE ORDER A-021-0535-1
New On-Road Heavy-Duty Engines
Page 1 of 2 Pages

Pursuant to the authority vested in the Air Resources Board by Health and Safety Code Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code Sections 39515 and 39516 and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: The engine and emission control systems produced by the manufacturer are certified as described below for use in on-road motor vehicles with a manufacturer's GVWR over 14,000 pounds. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	ENGINE SIZES (L)	FUEL TYPE [1]	STANDARDS & TEST PROCEDURE	INTENDED SERVICE CLASS [2]	ECS & SPECIAL FEATURES [3]	DIAGNOSTIC [6]
2010	ACEXH0729XAC	11.9	Diesel	Diesel	HHDD	DDI, TC, CAC, ECM, EGR, OC, SCR-U, PTOX	EMD

PRIMARY ENGINE'S IDLE EMISSIONS CONTROL [5]	ADDITIONAL IDLE EMISSIONS CONTROL [5]
30g	N/A

ENGINE (L)	ENGINE MODELS / CODES (rated power, in hp)
11.9	See attachment for engine models and ratings

* =not applicable; **GVWR**=gross vehicle weight rating; **13 CCR xyz**=Title 13, California Code of Regulations, Section xyz; **40 CFR 86.abc**=Title 40, Code of Federal Regulations, Section 86.abc; **L**=liter; **hp**=horsepower; **kw**=kilowatt; **hr**=hour;

[1] **CNG/LNG**=compressed/liquefied natural gas; **LPG**=liquefied petroleum gas; **E85**=85% ethanol fuel; **MF**=multi fuel a.k.a. **BF**=bi fuel; **DF**=dual fuel; **FF**=flexible fuel;

[2] **L/M/H HDD**=light/medium/heavy heavy-duty diesel; **UB**=urban bus; **HDO**=heavy duty Otto;

[3] **ECS**=emission control system; **TWC/OC**=three-way/oxidizing catalyst; **NAC**=NOx adsorption catalyst; **SCR-U / SCR-N**=selective catalytic reduction – urea / – ammonia; **WU (prefix)** =warm-up catalyst; **DPF**=diesel particulate filter; **PTOX**=periodic trap oxidizer; **HO2S/O2S**=heated/oxygen sensor; **HAFS/AFS**=heated/air-fuel-ratio sensor (a.k.a., universal or linear oxygen sensor); **TBI**=throttle body fuel injection; **SFI/MFI**=sequential/multi port fuel injection; **DGI**=direct gasoline injection; **GCARB**=gaseous carburetor; **IDI/DDI**=indirect/direct diesel injection; **TC/SC**=turbo/super charger; **CAC**=charge air cooler; **EGR / EGR-C**=exhaust gas recirculation / cooled EGR; **PAIR/AIR**=pulsed/secondary air injection; **SPL**=smoke puff limiter; **ECM/PCM**=engine/powertrain control module; **EM**=engine modification; **2 (prefix)**=parallel; **(2) (suffix)**=in series;

[5] **ESS**=engine shutdown system (per 13 CCR 1956.8(a)(6)(A)1); **30g**=30 g/hr NOx (per 13 CCR 1956.8(a)(6)(C); **APS** =internal combustion auxiliary power system; **ALT**=alternative method (per 13 CCR 1956.8(a)(6)(D); **Exempt**=exempted per 13 CCR 1956 8(a)(6)(B) or for CNG/LNG fuel systems; **N/A**=not applicable (e.g., Otto engines and vehicles);

[6] **EMD**=engine manufacturer diagnostic system (13 CCR 1971); **OBD**=on-board diagnostic system (13 CCR 1971.1);

Following are: 1) the FTP exhaust emission standards, or family emission limit(s) as applicable, under 13 CCR 1956.8; 2) the EURO and NTE limits under the applicable California exhaust emission standards and test procedures for heavy-duty diesel engines and vehicles (Test Procedures); and 3) the corresponding certification levels, for this engine family. "Diesel" CO, EURO and NTE certification compliance may have been demonstrated by the manufacturer as provided under the applicable Test Procedures in lieu of testing. (For flexible- and dual-fueled engines, the CERT values in brackets [ ] are those when tested on conventional test fuel. For multi-fueled engines, the STD and CERT values for default operation permitted in 13 CCR 1956.8 are in parentheses.).

in g/bhp-hr	NMHC		NOx		NMHC+NOx		CO		PM		HCHO	
	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO	FTP	EURO
STD	0.14	0.14	0.20	0.20	*	*	15.5	15.5	0.01	0.01	*	*
FEL	*	*	*	*	*	*	*	*	*	*	*	*
CERT	0.03	0.01	0.09	0.07	*	*	0.0	0.0	0.003	0.002	*	*
NTE	0.21		0.30		*		19.4		0.02		*	

[4] **g/bhp-hr**=grams per brake horsepower-hour; **FTP**=Federal Test Procedure; **EURO**=Euro III European Steady-State Cycle, including **RMCSET**=ram mode cycle supplemental emissions testing; **NTE**=Not-to-Exceed; **STD**=standard or emission test cap; **FEL**=family emission limit; **CERT**=certification level; **NMHC/HC**=non-methane/hydrocarbon; **NOx**=oxides of nitrogen; **CO**=carbon monoxide; **PM**=particulate matter; **HCHO**=formaldehyde; **(Rev.: 2007-02-26)**

BE IT FURTHER RESOLVED: Certification to the FEL(s) listed above, as applicable, is subject to the following terms, limitations and conditions. The FEL(s) is the emission level declared by the manufacturer and serves in lieu of an emission standard for certification purposes in any averaging, banking, or trading (ABT) programs. It will be used for determining compliance of any engine in this family and compliance with such ABT programs.

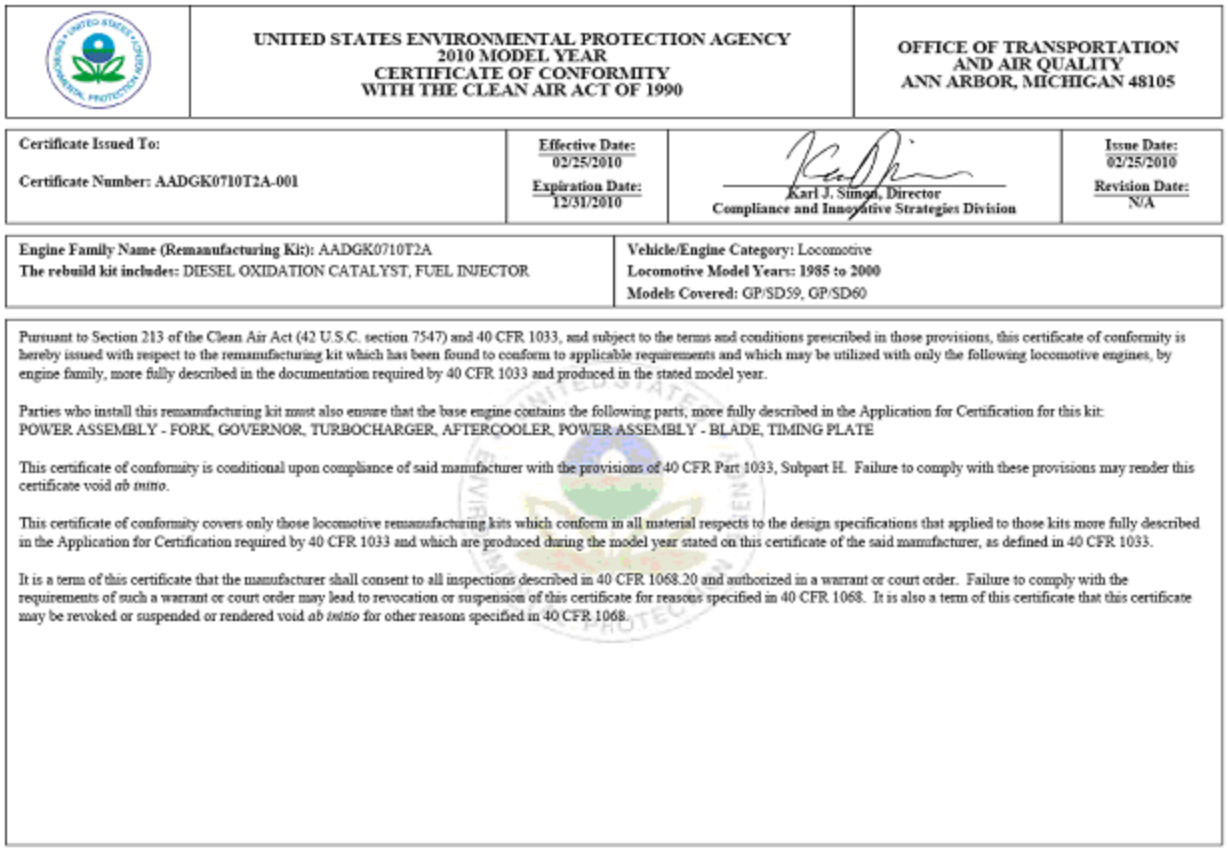
BE IT FURTHER RESOLVED: Except in vehicle applications exempted per 13 CCR 1956.8(a)(6)(B), engines in this engine family certified under 13 CCR 1956.8(a)(6)(C) [30 g/hr NOx] and section 35.B.4 of the incorporated "California Exhaust Emissions Standards and Test Procedures for 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles" (HDDE Test Procedures) adopted Dec. 12, 2002, as last amended Sep. 1, 2006, shall be provided with an approved "Certified Clean Idle" label that shall be affixed to the vehicle into which the engine is installed.

BE IT FURTHER RESOLVED: For the listed engine models the manufacturer has submitted the materials to demonstrate certification compliance with 13 CCR 1965 (emission control labels) and 13 CCR 2035 et seq. (emission control warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

The Bureau of Automotive Repair will be notified by copy of this Executive Order.

Figure E-2
Example of U.S. EPA Certificate of Conformity for a Locomotive Engine Remanufacture Kit



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2010 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT OF 1990

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To:

Certificate Number: AADGK0710T2A-001

Effective Date: 02/25/2010
Expiration Date: 12/31/2010

Karl J. Simon, Director
Compliance and Innovative Strategies Division

Issue Date: 02/25/2010
Revision Date: N/A

Engine Family Name (Remanufacturing Kit): AADGK0710T2A
The rebuild kit includes: DIESEL OXIDATION CATALYST, FUEL INJECTOR

Vehicle/Engine Category: Locomotive
Locomotive Model Years: 1985 to 2000
Models Covered: GP/SD59, GP/SD60

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR 1033, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the remanufacturing kit which has been found to conform to applicable requirements and which may be utilized with only the following locomotive engines, by engine family, more fully described in the documentation required by 40 CFR 1033 and produced in the stated model year.

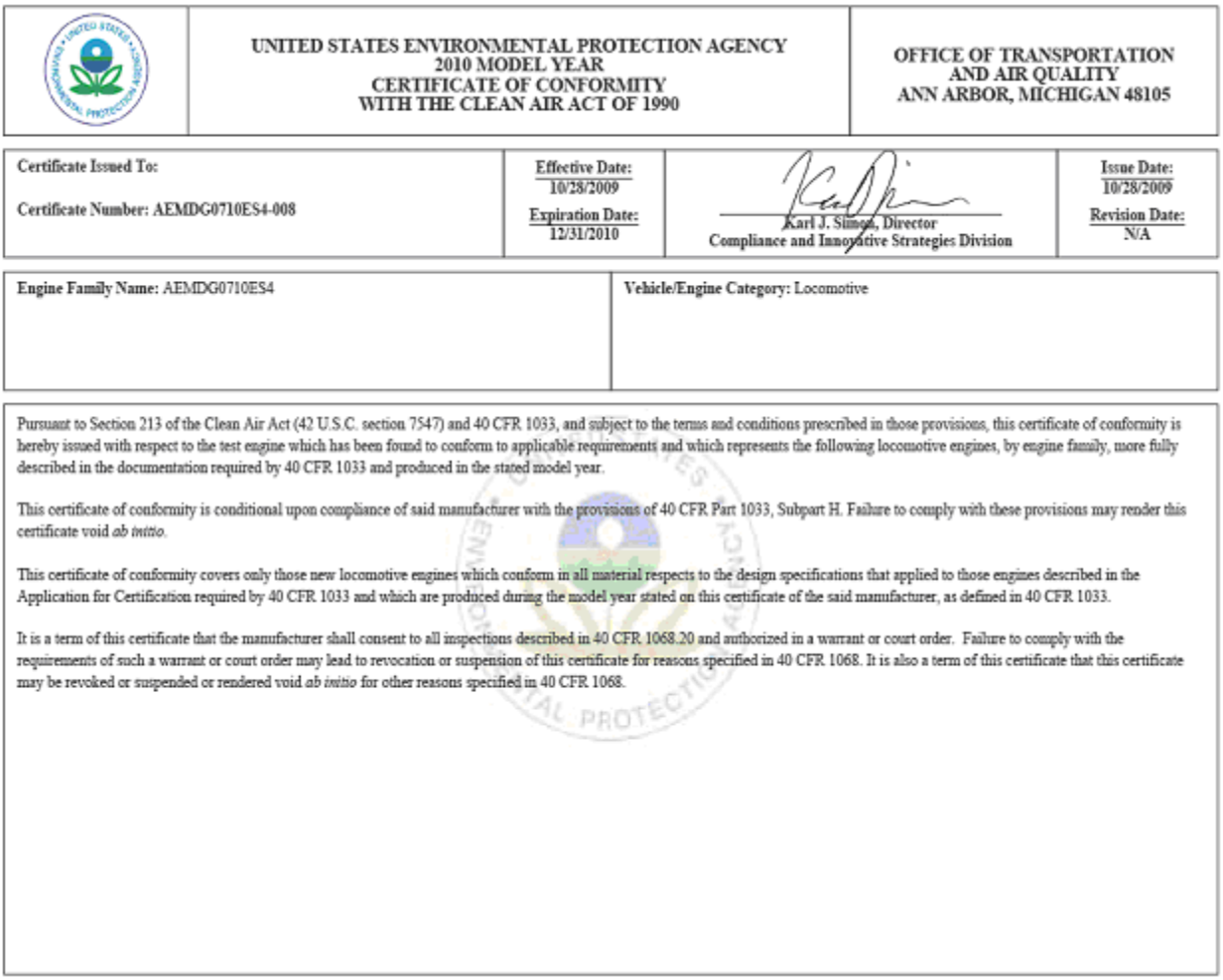
Parties who install this remanufacturing kit must also ensure that the base engine contains the following parts, more fully described in the Application for Certification for this kit: POWER ASSEMBLY - FORK, GOVERNOR, TURBOCHARGER, AFTERCOOLER, POWER ASSEMBLY - BLADE, TIMING PLATE

This certificate of conformity is conditional upon compliance of said manufacturer with the provisions of 40 CFR Part 1033, Subpart H. Failure to comply with these provisions may render this certificate void *ab initio*.

This certificate of conformity covers only those locomotive remanufacturing kits which conform in all material respects to the design specifications that applied to those kits more fully described in the Application for Certification required by 40 CFR 1033 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR 1033.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR 1068. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR 1068.

Figure E-3
Example of U.S. EPA Certificate of Conformity for a New Locomotive Engine



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2010 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT OF 1990

OFFICE OF TRANSPORTATION
AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To:

Certificate Number: AEMDG0710ES4-008

Effective Date: 10/28/2009

Expiration Date: 12/31/2010

Karl J. Simon, Director
Compliance and Innovative Strategies Division

Issue Date: 10/28/2009

Revision Date: N/A

Engine Family Name: AEMDG0710ES4

Vehicle/Engine Category: Locomotive

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR 1033, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engine which has been found to conform to applicable requirements and which represents the following locomotive engines, by engine family, more fully described in the documentation required by 40 CFR 1033 and produced in the stated model year.

This certificate of conformity is conditional upon compliance of said manufacturer with the provisions of 40 CFR Part 1033, Subpart H. Failure to comply with these provisions may render this certificate void *ab initio*.

This certificate of conformity covers only those new locomotive engines which conform in all material respects to the design specifications that applied to those engines described in the Application for Certification required by 40 CFR 1033 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR 1033.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068.20 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR 1068. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR 1068.

B. Retrofit System Verification

ARB's verification procedures provide a way to quantify and thoroughly evaluate the emission reduction capabilities and durability of a variety of emission control strategies as part of a retrofit in-use program. It ensures that emission reductions achieved by a control strategy are both real and durable and that production units in the field are achieving emission reductions which are consistent with their verification.

1. Diesel: ARB has a verification procedure for in-use strategies to control emissions from diesel engines (diesel emission control systems or DECS). The verification procedure requires a minimum PM reduction of at least 25 percent. If a diesel emission control strategy also reduces NOx emissions by at least 15 percent, that reduction can also be verified. Emission control strategies for diesel engines are verified based on a tiered verification classification shown in Table E-1 below. It is the responsibility of the diesel emission control strategies manufacturer to provide data to verify emission reduction claims. ARB issues EOs for verified emission control strategies destined for sale in California. An example of an EO for a retrofit emission control system for diesel engines is shown in Figure E-4.

Table E-1
Verification Levels for Diesel Emission Control Strategies

Pollutant	Emission Reduction	Classification
PM	< 25%	Not Verified
	≥ 25%	Level 1
	≥ 50%	Level 2
	≥ 85%, or ≤ 0.01 g/bhp-hr	Level 3
NOx	< 15%	Not Verified
	≥ 15%	Verified in 5% Increments

2. Large Spark-Ignition: ARB staff also has a retrofit verification procedure for large spark-ignited engines (LSI). This procedure can be used to verify retrofit systems to reduce NOx and hydrocarbon (HC) emissions from LSI engines. Emission control strategies for LSI engines are verified based on a tiered verification classification shown in Table E-2 below.

Table E-2
LSI Emission Control System Verification Levels

Classification	Percentage Reduction (HC+NOx)	Absolute Emissions (HC+NOx)
LSI Level 1 [1]	> 25%[2]	Not Applicable
LSI Level 2 [1]	> 75%[3]	3.0 g/bhp-hr[3]
LSI Level 3a [1]	> 85%[4]	0.5, 1.0, 1.5, 2.0, 2.5 g/bhp-hr
LSI Level 3b [5]	Not Applicable	0.5, 1.0, 1.5, 2.0 g/bhp-hr

(1) Applicable to uncontrolled engines only
(2) The allowed verified emissions reduction is capped at 25% regardless of actual emission test values
(3) The allowed verified reduction for LSI Level 2 is capped at 75% or 3.0 g/bhp-hr regardless of actual emission test values
(4) Verified in 5% increments, applicable to LSI Level 3a classifications only
(5) Applicable to emission-controlled engines only

Figure E-4
Example of an EO for a Retrofit Emission Control System

State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER DE-08-006-02

Pursuant to the authority vested in the Air Resources Board (ARB) by the Health and Safety Code, Division 26, Part 5, Chapter 2; and pursuant to the authority vested in the undersigned by Health and Safety Code section 39515 and 39516 and Executive Order G-02-003;

Relating to Exemptions under section 27156 of the Vehicle Code, and Verification under sections 2700 through 2710 of Title 13 of the California Code of Regulations (CCR)

Advanced Emission Controls, LLC ( )
System

ARB has reviewed Cleaire's request for verification of the system (system). Based on an evaluation of the data provided, and pursuant to the terms and conditions specified below, the Executive Officer of ARB hereby finds that the system reduces emissions of diesel particulate matter (PM) consistent with a Level 3 device (greater than or equal to an 85 percent reduction), achieves a 25 percent reduction in oxides of nitrogen (NOx) emissions (Title 13, CCR, sections 2702 (f) and 2708), and is compliant with the 2009 nitrogen dioxide emissions limit. Accordingly, the Executive Officer determines that the system merits verification and, subject to the terms and conditions specified below, classifies the system as a Level 3 Plus system with a 25 percent NOx reduction for heavy-duty on-road vehicles that use heavy-duty diesel engines from the engine families listed in Attachment 1.

The aforementioned verification is subject to the following terms and conditions:

- The engine must be originally manufactured from model year 1993 through 2006 and have an engine family name listed in Attachment 1.
- The engine must be used by an on-road motor vehicle with a manufacturer's Gross Vehicle Weight Rating of over 14,000 pounds.
- The engine must not employ exhaust gas recirculation.
- The application must have a duty cycle with a temperature profile greater than 260 degrees Celsius for at least 25 percent of the time.
- The engine must be in its original certified configuration.
- The engine must not be certified to have a pre-existing original equipment manufacturer (OEM) diesel particulate filter.
- The engine must not be certified to have a pre-existing OEM diesel oxidation catalyst.
- The engine must be certified for on-road applications at a PM emission level of at most 0.1 grams per brake horsepower-hour (g/bhp-hr), and greater than 0.01 g/bhp-hr.
- The engine must have a four-stroke combustion cycle.

- The engine must be turbocharged.
- The engine must be well maintained and not consume lubricating oil at a rate greater than that specified by the engine manufacturer.
- The end-user must monitor and keep accurate records of the engine's oil consumption rate for the duration of time that the Longview™ is installed. These records must be readily available to ARB or the system manufacturer upon request.
- Lube oil, or other oil, must not be mixed with the fuel.
- The engine must be operated on fuel that has a sulfur content of no more than 15 parts per million by weight.
- The system must not be operated with fuel additives, as defined in section 2701 of Title 13 of the CCR, unless explicitly verified for use with the fuel additive(s).
- The system must not be used with any other systems or engine modifications without ARB and manufacturer's approval.
- The other terms and conditions specified below.

IT IS ALSO ORDERED AND RESOLVED: That installation of the system, manufactured by , has been found not to reduce the effectiveness of the applicable vehicle pollution control system, and therefore, the system is exempt from the prohibitions in section 27156 of the Vehicle Code for installation on heavy-duty on-road vehicles using engines listed in Attachment 1. This exemption is only valid provided the engines meet the aforementioned conditions.

The system consists of a lean NOx catalyst, secondary fuel injection system, electronic controller, control sensors, and a catalyzed passive diesel particulate filter. The fuel injection system includes a fuel pump, injector, injector block, and a pressure regulator. The sensors include a manifold absolute pressure sensor, engine speed sensor, two exhaust temperature sensors, and an engine backpressure sensor. The major components of the Longview™ system are identified in Attachment 2. Schematics of the approved product and engine labels are shown in Attachment 3.

This Executive Order is valid provided that installation instructions for the Longview™ system do not recommend tuning the vehicle to specifications different from those of the vehicle manufacturer.

must ensure that the installation of the system conforms to all applicable industrial safety requirements.

No changes are permitted to the device without the written approval of ARB. Changes from the verified design without written approval of ARB shall invalidate this Executive Order.

Changes made to the design or operating conditions of the system, as exempted by ARB, which adversely affect the performance of the vehicle's pollution control system, shall invalidate this Executive Order.

Marketing of the system using identification other than that shown in this Executive Order or for an application other than that listed in this Executive Order shall be prohibited unless prior written approval is obtained from ARB.

This Executive Order shall not apply to any system advertised, offered for sale, sold with, or installed on a motor vehicle prior to or concurrent with transfer to an ultimate purchaser.

A copy of this Executive Order must be provided to the ultimate purchaser at the time of sale.

The ARB estimates that the system might incur a fuel economy penalty between three and seven percent depending on the application.

As specified in section 2706 (j) (Title 13, CCR) of the Verification Procedure, Warranty and In-Use Compliance Requirements for In-Use Strategies to Control Emissions from Diesel Engines (Procedure), ARB assigns each Diesel Emission Control Strategy a family name. The designated family name for the verification as outlined above is:

CA/CLE/2008/PM3+/N25/ON/LNF01

As stated in the Procedure, is responsible for recordkeeping requirements (section 2702), honoring the required warranty (section 2707), and conducting in-use compliance testing (section 2709).

This Executive Order is valid provided that the diesel fuel used in conjunction with the device complies with Title 13, CCR, sections 2281 and 2282, and if biodiesel is used, the biodiesel blend shall be 20 percent or less subject to the following conditions:

- The biodiesel portion of the blend complies with the American Society for Testing and Materials specification D6751 applicable for 15 parts per million sulfur content; and
- The diesel fuel portion of the blend complies with Title 13, CCR, sections 2281 and 2282.

Other alternative diesel fuels such as, but not limited to, ethanol diesel blends and water emulsified diesel fuel are excluded from this Executive Order.

In addition to the foregoing, ARB reserves the right in the future to review this Executive Order and the exemption and verification provided herein to assure that the exempted and verified add-on or modified part continues to meet the standards and procedures of Title 13, CCR, section 2222, et seq and Title 13, CCR, sections 2700 through 2710.

Systems verified under this Executive Order shall conform to all applicable California emissions regulations.

This Executive Order does not release from complying with all other applicable regulations.

Violation of any of the above conditions shall be grounds for revocation of this Executive Order.

This Executive Order hereby supersedes Executive Order DE-08-006-01 (dated February 27, 2009) and Executive Order DE-08-006 (dated December 9, 2008).

Executed at El Monte, California, and effective this 14th day of January 2010.

Robert H. Cross, Chief
Mobile Source Control Division

Attachment 1: ARB Approved Engine Families for the
Attachment 2: Parts List for the
Attachment 3: Labels for the

APPENDIX F

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Appendix F

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N/A

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N/A

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N/A

Chapter 14: Lawn and Garden Equipment Replacement

N/A

APPENDIX G

COST-EFFECTIVENESS LIMIT AND CAPITAL RECOVERY FACTORS

APPENDIX G

CARL MOYER PROGRAM REVISED COST-EFFECTIVENESS LIMIT AND CAPITAL RECOVERY FACTORS

Per statute, the Air Resources Board (ARB or the Board) updates the cost-effectiveness limit and capital recovery factors (CRF) annually. At the date of approval of the 2011 Carl Moyer Program Guidelines (April 28, 2011), the cost-effectiveness limit was $16,640 per weighted ton of pollutants reduced and the discount rate to determine capital recovery factors for various project lives was two percent. In April of 2012, 2013, 2014 and 2015, the cost-effectiveness limit was updated to $17,080, $17,460, $17,720 and $18,030 respectively. The discount rate remained at two percent in 2012, decreased to one percent in 2013 and 2014, and increased to two percent in 2015.

To update these values for use in 2016, the average rates of return for U.S. Treasury securities and the California Consumer Price Index data available at the time of publication (January to September 2015) were used. The newly derived factors are shown in Tables G-1 and G-2f. Based on these values, the discount rate remains at two percent and the capital recovery factors (as shown in Table G-3a) and truncated cost-effectiveness limit of $18,260 are in effect for contracts executed by air districts beginning January 1, 2016. ARB will update these factors prior to July 1, 2017, and annually thereafter through a Mail-Out.

Revised Cost-Effectiveness Limit

In order to receive Carl Moyer Program funding, each project must meet the specified maximum cost-effectiveness limit. Cost-effectiveness is a measure of the dollars provided to a project for each ton of covered emissions reduced. To calculate Carl Moyer Program cost-effectiveness, the project grant amount is annualized based upon the project's life and an appropriate discount rate. This annual cost is divided by the project's estimated emission reductions to determine the overall cost-effectiveness of the covered emissions reduced as indicated in Appendix C.

Using the California Consumer Price Index (http://www.dir.ca.gov/dlsr/CPI/PresentCCPI.PDF, http://www.dir.ca.gov/dlsr/CPI/EntireCCPI.PDF), and the California Department of Finance method (http://www.dof.ca.gov/HTML/FS_DATA/LatestEconData/FS_UseCPI.php) of converting the Consumer Price Index to an inflation rate, a change in the cost-effectiveness limit can be determined over a specified time period (annually). Table G-1 shows the changes in the cost-effectiveness limit over time based on changes in the Consumer Price Index.

Table G-1
Cost-Effectiveness Limit Criteria

Year	Annual CA CPI	Percent (%) change (inflation rate)	Annual modified amount	Revised CE cap
1998	163.7	NA	NA	$12,000
1999	168.5	2.93%	$352	$12,352
2000	174.8	3.74%	$462	$12,814
2001	181.7	3.95%	$506	$13,319
2002	186.1	2.42%	$323	$13,642
2003	190.4	2.31%	$315	$13,957
2004	195.4	2.63%	$367	$14,324
2005	202.6	3.68%	$528	$14,852
2006	210.5	3.90%	$579	$15,431
2007	217.4	3.28%	$506	$15,938
2008	224.8	3.40%	$541	$16,479
2009	224.1	-0.31%	-$51	$16,428
2010	227.0	1.29%	$212	$16,640
2011	233.0	2.66%	$443	$17,084
2012	238.3	2.25%	$385	$17,469
2013	241.8	1.46%	$255	$17,724
2014	246.1	1.77%	$313	$18,037
2015	249.1	1.25%	$225	$18,262

Revised Capital Recovery Factors

The CRF used for determining the annualized costs of Carl Moyer Program grants are based on a discount rate. The CRF uses an interest rate and project life to determine the rate at which earnings could reasonably be expected if the same funds were invested over a length of time.

Previous versions of the guidelines updated the CRF using the average annual yield of United States (U.S.) Treasury securities (http://federalreserve.gov/releases/h15/) with a 3-year, 5-year, 7-year, and 10-year maturation over a specific period of time. Annual data for 2010 using the average rates of return for U.S. Treasury securities over that year (January to December 2010) yielded a revised discount rate as shown in Table G-2a below. Rounding to a whole number yielded a discount rate of 2 percent:

Table G-2a
Discount Rate Factor (Available for use through June 30, 2012)

Average Monthly Rate - 2010													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	1.49%	1.40%	1.51%	1.64%	1.32%	1.17%	0.98%	0.78%	0.74%	0.57%	0.67%	0.99%	1.11%
5 year	2.48%	2.36%	2.43%	2.58%	2.18%	2.00%	1.76%	1.47%	1.41%	1.18%	1.35%	1.93%	1.93%
7 year	3.21%	3.12%	3.16%	3.28%	2.86%	2.66%	2.43%	2.10%	2.05%	1.85%	2.02%	2.66%	2.62%
10 year	3.73%	3.69%	3.73%	3.85%	3.42%	3.20%	3.01%	2.70%	2.65%	2.54%	2.76%	3.29%	3.21%
Overall average for January-December 2010													**2.22%**

Annual data for 2011 using the average rates of return for U.S. Treasury securities from January to December 2011 yielded a revised discount rate as shown in Table G-2b below. Rounding to a whole number yielded a discount rate of 2 percent:

Table G-2b
Discount Rate Factor (Available for use April 1, 2012 through June 30, 2013)

Average Monthly rate - 2011													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	1.03%	1.28%	1.17%	1.21%	0.94%	0.71%	0.68%	0.38%	0.35%	0.47%	0.39%	0.39%	0.75%
5 year	1.99%	2.26%	2.11%	2.17%	1.84%	1.58%	1.54%	1.02%	0.90%	1.06%	0.91%	0.89%	1.52%
7 year	2.72%	2.96%	2.80%	2.84%	2.51%	2.29%	2.28%	1.63%	1.42%	1.62%	1.45%	1.43%	2.16%
10 year	3.39%	3.58%	3.41%	3.46%	3.17%	3.00%	3.00%	2.30%	1.98%	2.15%	2.01%	1.98%	2.79%
Overall average for January - December 2011													**1.81%**

Annual data for 2012 using the average rates of return for U.S. Treasury securities from January to December 2012 yielded a revised discount rate as shown in Table G-2c below. Rounding to a whole number yielded a discount rate of 1 percent:

Table G-2c
Discount Rate Factor (Available for use April 1, 2013 through June 30, 2014)

Average Monthly rate - 2012													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.36%	0.38%	0.51%	0.43%	0.39%	0.39%	0.33%	0.37%	0.34%	0.37%	0.36%	0.35%	0.38%
5 year	0.84%	0.83%	1.02%	0.89%	0.76%	0.71%	0.62%	0.71%	0.67%	0.71%	0.67%	0.70%	0.76%
7 year	1.38%	1.37%	1.56%	1.43%	1.21%	1.08%	0.98%	1.14%	1.12%	1.15%	1.08%	1.13%	1.22%
10 year	1.97%	1.97%	2.17%	2.05%	1.80%	1.62%	1.53%	1.68%	1.72%	1.75%	1.65%	1.72%	1.80%
Overall average for January – December 2012													**1.04%**

Annual data for 2013 using the average rates of return for U.S. Treasury securities from January to December 2013 yielded a revised discount rate as shown in Table G-2d below. Rounding to a whole number yielded a discount rate of 1 percent:

Table G-2d

Discount Rate Factor (Available for use April 1, 2014 through June 30, 2015)

Average Monthly rate - 2013													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.39%	0.40%	0.39%	0.34%	0.40%	0.58%	0.64%	0.70%	0.78%	0.63%	0.58%	0.69%	0.54%
5 year	0.81%	0.85%	0.82%	0.71%	0.84%	1.20%	1.40%	1.52%	1.60%	1.37%	1.37%	1.58%	1.17%
7 year	1.30%	1.35%	1.32%	1.15%	1.31%	1.71%	1.99%	2.15%	2.22%	1.99%	2.07%	2.29%	1.74%
10 year	1.91%	1.98%	1.96%	1.76%	1.93%	2.30%	2.58%	2.74%	2.81%	2.62%	2.72%	2.90%	2.35%
Overall average for January – December 2013													**1.45%**

Annual data for 2014 using the average rates of return for U.S. Treasury securities from January to December 2014 yielded a revised discount rate as shown in Table G-2e below. Rounding to a whole number yielded a discount rate of 2 percent:

Table G-2e

Discount Rate Factor (Available for use April 1, 2015 through December 31, 2015)

Average Monthly rate - 2014													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.78%	0.69%	0.82%	0.88%	0.83%	0.90%	0.97%	0.93%	1.05%	0.88%	0.96%	1.06%	0.90%
5 year	1.65%	1.52%	1.64%	1.70%	1.68%	1.68%	1.70%	1.63%	1.77%	1.55%	1.62%	1.64%	1.64%
7 year	2.29%	2.15%	2.23%	2.27%	2.19%	2.19%	2.17%	2.08%	2.22%	1.98%	2.03%	1.98%	2.14%
10 year	2.86%	2.71%	2.72%	2.71%	2.60%	2.60%	2.54%	2.42%	2.53%	2.30%	2.33%	2.21%	2.54%
Overall average for January – December 2014													**1.81%**

Annual data for 2015 using the average rates of return for U.S. Treasury securities from January to September 2015 yielded a revised discount rate as shown in Table G-2f below. Rounding to a whole number yielded a discount rate of 2 percent:

Table G-2f

Discount Rate Factor (Available for use beginning January 1, 2016)

Average Monthly rate - 2015													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.90%	0.99%	1.02%	0.87%	0.98%	1.07%	1.03%	1.03%	1.01%	NA	NA	NA	0.99%
5 year	1.37%	1.47%	1.52%	1.35%	1.54%	1.68%	1.63%	1.54%	1.49%	NA	NA	NA	1.51%
7 year	1.67%	1.79%	1.84%	1.69%	1.93%	2.10%	2.04%	1.91%	1.88%	NA	NA	NA	1.87%
10 year	1.88%	1.98%	2.04%	1.94%	2.20%	2.36%	2.32%	2.17%	2.17%	NA	NA	NA	2.12%
Overall average for January – September 2015													**1.62%**

*NA: Data not available at time of publication.

Table G-2d

Discount Rate Factor (Available for use April 1, 2014 through June 30, 2015)

Average Monthly rate - 2013													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.39%	0.40%	0.39%	0.34%	0.40%	0.58%	0.64%	0.70%	0.78%	0.63%	0.58%	0.69%	0.54%
5 year	0.81%	0.85%	0.82%	0.71%	0.84%	1.20%	1.40%	1.52%	1.60%	1.37%	1.37%	1.58%	1.17%
7 year	1.30%	1.35%	1.32%	1.15%	1.31%	1.71%	1.99%	2.15%	2.22%	1.99%	2.07%	2.29%	1.74%
10 year	1.91%	1.98%	1.96%	1.76%	1.93%	2.30%	2.58%	2.74%	2.81%	2.62%	2.72%	2.90%	2.35%
Overall average for January – December 2013													**1.45%**

Annual data for 2014 using the average rates of return for U.S. Treasury securities from January to December 2014 yielded a revised discount rate as shown in Table G-2e below. Rounding to a whole number yielded a discount rate of 2 percent:

Table G-2e

Discount Rate Factor (Available for use April 1, 2015 through December 31, 2015)

Average Monthly rate - 2014													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.78%	0.69%	0.82%	0.88%	0.83%	0.90%	0.97%	0.93%	1.05%	0.88%	0.96%	1.06%	0.90%
5 year	1.65%	1.52%	1.64%	1.70%	1.68%	1.68%	1.70%	1.63%	1.77%	1.55%	1.62%	1.64%	1.64%
7 year	2.29%	2.15%	2.23%	2.27%	2.19%	2.19%	2.17%	2.08%	2.22%	1.98%	2.03%	1.98%	2.14%
10 year	2.86%	2.71%	2.72%	2.71%	2.60%	2.60%	2.54%	2.42%	2.53%	2.30%	2.33%	2.21%	2.54%
Overall average for January – December 2014													**1.81%**

Annual data for 2015 using the average rates of return for U.S. Treasury securities from January to September 2015 yielded a revised discount rate as shown in Table G-2f below. Rounding to a whole number yielded a discount rate of 2 percent:

Table G-2f

Discount Rate Factor (Available for use beginning January 1, 2016)

Average Monthly rate - 2015													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
3 year	0.90%	0.99%	1.02%	0.87%	0.98%	1.07%	1.03%	1.03%	1.01%	NA	NA	NA	0.99%
5 year	1.37%	1.47%	1.52%	1.35%	1.54%	1.68%	1.63%	1.54%	1.49%	NA	NA	NA	1.51%
7 year	1.67%	1.79%	1.84%	1.69%	1.93%	2.10%	2.04%	1.91%	1.88%	NA	NA	NA	1.87%
10 year	1.88%	1.98%	2.04%	1.94%	2.20%	2.36%	2.32%	2.17%	2.17%	NA	NA	NA	2.12%
Overall average for January – September 2015													**1.62%**

*NA: Data not available at time of publication.

Refer to Table G-3a below for CRFs for various project lives at a 2 percent discount rate, and to Table G-3b below for CRFs for various project lives at a 1 percent discount rate. Each source category chapter will specify which project lives are acceptable to determine which CRF value to use.

Table G-3a
Capital Recovery Factor (CRF) for Various Project Lives
At a Two Percent Discount Rate (Effective April 2011 through March 2013 and as of April 2015)

Project Life	CRF
1	1.02
2	0.515
3	0.347
4	0.263
5	0.212
6	0.179
7	0.155
8	0.137
9	0.123
10	0.111
11	0.102
12	0.095
13	0.088
14	0.083
15	0.078
16	0.074
17	0.07
18	0.067
19	0.064
20	0.061

Table G-3b
Capital Recovery Factor (CRF) for Various Project Lives
At a One Percent Discount Rate (Effective April 2013 through March 2015)

Project Life	CRF
1	1.01
2	0.508
3	0.34
4	0.256
5	0.206
6	0.173
7	0.149
8	0.131
9	0.117
10	0.106
11	0.096
12	0.089
13	0.082
14	0.077
15	0.072
16	0.068
17	0.064
18	0.061
19	0.058
20	0.055

AGRICULTURAL ASSISTANCE PROGRAM

The Agricultural Assistance Program provides funds for "the new purchase, retrofit, repower, or add-on of previously unregulated equipment for agricultural sources." Unlike the Carl Moyer Program, the Agricultural Assistance Program does not require the emission reductions achieved to be surplus. Therefore, these funds can be used to pay for compliance in certain categories. However, the Agricultural Assistance Program does follow the Carl Moyer Program Guidelines for project selection and grant awards.

A. Background

The Agricultural Assistance Program was created through provisions of Assembly Bill 923 (AB 923, Firebaugh) and went into effect on January 1, 2005. This legislation authorizes air districts to increase motor vehicle fees by up to an additional $2. Air districts receiving the additional $2 surcharge may use the funds to implement four specific programs:

1. Projects funded through the Carl Moyer Program.

2. The new purchase, retrofit, repower, or previously unregulated equipment for agricultural sources.

3. Purchase of new school buses or the repower or retrofit of emissions control equipment for existing school buses pursuant to the Lower-Emission School Bus Program adopted by the Board.

4. An accelerated vehicle retirement or repair program.

5. Onboard natural gas tank replacements in existing school buses or the enhancement of deteriorating natural gas fueling dispensers of fueling infrastructure pursuant to the Lower-Emission School Bus Program adopted by the Board.

6. Alternative fuel and electric infrastructure projects solicited and selected through a competitive bid process.

The Agricultural Assistance Program was created to implement the second program listed above.

The statutory provisions of AB 923 also require that Agricultural Assistance Program projects follow the Carl Moyer Guidelines. Project criteria in Chapter 3: Administration and Chapter 10: Portable and Stationary Agricultural Sources chapters of the 2011 Carl Moyer Program Guidelines are to be followed (except as specified in Section D of this chapter), with modifications to the surplus emission reductions requirements and cost-effectiveness methodology. Air district funds applied to the Agricultural Assistance Program do not count as air district match funds in the Carl Moyer Program.

B. Definition

"Agricultural source of air pollution," for the purposes of AB 923 and the Agricultural Assistance Program, is defined in Health and Safety Code section 39011.5(a) as "a source or group of sources used in the production of crops or raising of fowl or animals located on contiguous property and under common ownership or control." Four categories of emission sources are identified as part of this definition:

1. Large confined animal facilities as defined in California Code of Regulations, title 17, section 86500.

2. Internal combustion engines, including portable and off-road engines, unless used to propel instruments of husbandry.

3. Sources subject to requirements of Title V, the federal Operating Permitting Program for major stationary sources.

4. Sources of emissions otherwise subject to air district regulation.

C. Projects Eligible for Funding

Eligible project categories are found in Chapter 10: Portable and Stationary Agricultural Sources, Section C: Project Criteria of the 2011 Carl Moyer Program Guidelines.

D. Project Criteria

Two sets of criteria exist for agricultural assistance projects.

1. Statutory Criteria: The statutory provisions of AB 923 include requirements for Agricultural Assistance Program eligible projects:

   (A) Projects must involve the new purchase, retrofit, or repower of equipment.

   (B) Projects must reduce emissions from previously unregulated sources; that is, sources that are unregulated as of January 1, 2005 (the effective date of the legislation), but are subject to regulation at the time of the grant.

   (C) Projects must be operational and post-inspected within three years of rule adoption or before the compliance date of the rule, whichever is later.

   (D) ARB must determine that the applicable rule complies with Health and Safety Code sections 40913, 40914, and 41503.1 pertaining to air district's attainment plan measures. Air district's plans must be designed to achieve and maintain the state ambient air quality standards by the earliest practicable date through the use of all feasible measures. ARB

routinely reviews air district's rules for compliance with these requirements and will treat agriculture-related rules the same way.

2. Other Criteria: Project criteria in Chapter 2: General Criteria, Chapter 10: Portable and Stationary Agricultural Sources, and these sections of Chapter 3: Program Administration; project application, contract, inspections, and payment as well as other Guideline requirements of the 2011 Carl Moyer Program Guidelines are to be adhered to with the following exceptions:

   (A) The Agricultural Assistance Program may be used to fund projects from previously unregulated agricultural sources of air pollution for a minimum of three years from the adoption of an applicable rule or until the compliance date, whichever is later.

   (B) The cost-effectiveness of a project is based on total emission reductions over the life of the project, not surplus emission reductions.

   (C) Emission reductions in the Agricultural Assistance Program are not required to be surplus to regulations. The emission benefits of projects funded by the Agricultural Assistance Program are already counted in the emission benefits of individual local rules or state regulations.

E. Cost-Effectiveness of Total Reductions

In order to ensure that the technologies and costs of projects funded by the Agricultural Assistance Program are generally comparable to those funded by the Carl Moyer Program, Agricultural Assistance Program projects must meet a "cost-effectiveness of total reductions" criterion. Air districts may set more restrictive cost-effectiveness of total reductions limits when implementing local programs.

The cost-effectiveness of total reductions is the annualized cost divided by the emission reductions as if no regulatory requirement existed:

$$\text{Cost-Effectiveness (\$/ton)} = \frac{\text{Annualized Cost (\$/yr)}}{\text{Weighted Emission Reductions if no Regulatory Requirement Existed (tons/yr)}}$$

For example, the cost-effectiveness of total reductions calculation for an agricultural irrigation pump engine would generally assume a project life of seven years, even if a local rule for agricultural use engines takes effect in two years or has already taken effect.

The annual emission reductions for each pollutant (oxides of nitrogen (NOx), reactive organic gases (ROG), and combustion particulate matter (PM)) are determined by calculating the annual emissions for the baseline technology and then subtracting from it the annual emissions of the reduced technology. Annual emissions may be calculated

based on hours of operation or fuel consumption. The formulas for calculating emissions are found in Appendix C of the 2011 Carl Moyer Program Guidelines.

The weighted total emission reductions are estimated by taking the sum of the project's annual emission reductions of NOx, ROG, and combustion PM using the following formula:

Weighted Total Emission Reductions = NOx reductions (tons/yr) +
ROG reductions (tons/yr) + 20*[combustion PM reductions (tons/yr)]

The emission standards and load factors for off-road diesel engines and large SI engines in Appendix D of the 2011 Carl Moyer Program Guidelines must be used for these calculations. The annualized cost is the amortization of the one-time incentive grant amount for the life of the project to yield an estimated annual cost. The capital recovery factors used for the annualized calculation are provided in Appendix G of the 2011 Carl Moyer Program Guidelines.

The incremental cost of a project is a percentage of new technology project costs. The percent of agricultural source engine project costs eligible for funding are in Chapter 10: Portable and Stationary Agricultural Sources of the 2011 Carl Moyer Program Guidelines.

General examples of calculating the cost-effectiveness of projects are provided in Appendix C of the 2011 Carl Moyer Program Guidelines. The examples are of projects achieving surplus emission reductions. However the steps leading to the final formula are similar for both programs and may be used as a guide.

NOTE: The cost-effectiveness of total reductions cannot be compared to the cost-effectiveness of Carl Moyer Program-eligible projects because it includes the total emission reductions associated with a project instead of only the surplus emission reductions.