Report on Reductions Achieved from Incentive-Based Emission Reduction Measures in the San Joaquin Valley

APPENDIX B.1: 2008 Carl Moyer Memorial Air Quality Standards Attainment Program Guidelines Part I and II

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THE CARL MOYER PROGRAM GUIDELINES

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Air Resources Board
California Environmental Protection Agency

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. The ARB appreciates the considerable efforts of district staff both in the development of these guidelines as well as the day-to-day implementation of the Carl Moyer Program.

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EXECUTIVE SUMMARY

Over the last 30 years, California's population has doubled and, correspondingly, sources of air pollution have also increased. While significant progress has been made in improving California's air quality in spite of this growth, air pollution remains a major challenge. Over 90 percent of Californians live in areas that have unhealthful air at times, exceeding State and federal health-based ambient air quality standards for ozone and particulate matter.

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 grant 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, reduces the costs to the regulated community, 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 aimed at meeting clean air goals.

Over its first seven years, the Carl Moyer Program provided $170 million to clean up approximately 7,500 engines throughout California. This achieved emission reductions of about 24 tons per day of oxides of nitrogen and one ton per day of toxic diesel particulate matter. Legislative changes in 2004 provided continued funding for the Carl Moyer Program up to $141 million per year Statewide through 2015. While the legislative focus of the Carl Moyer Program has been on achieving reductions of criteria and toxic pollutants, the program has a beneficial impact on greenhouse gas emissions as well - especially by funding hybrid and electric projects.

The Carl Moyer Program is implemented through the cooperative efforts of the California Air Resources Board (ARB) and local California air pollution control/air quality management districts (districts). Every year, ARB distributes State funds to participating districts. Such districts follow ARB Carl Moyer Program Guidelines to select, fund, and monitor specific clean air projects in their areas. The Carl Moyer Program 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 guidelines for administering the Agricultural Assistance Program. While the Guidelines incorporate criteria specified in State law and provide basic standards for program implementation, districts may impose additional and/or more stringent criteria in order to tailor their programs to meet local needs. This affords districts with considerable flexibility in Carl Moyer Program implementation while ensuring the proper and responsible use of State funds.

State law provides for ARB to revise the Carl Moyer Program Guidelines when necessary to improve the ability of the program to achieve its goals. The Guidelines were last updated in November 2005 to reflect numerous significant revisions to the program mandated by changes in statute, including expansion of the program and the addition of more pollutants and source categories that are eligible for funding.

As the Carl Moyer Program enters its tenth year, ARB and the local air districts have accumulated considerable experience in program oversight and implementation. Such experience has been applied in developing the 2008 Guidelines, improving and refining many aspects of the program. The ARB worked in close cooperation with the local air districts in developing revisions to these Guidelines, receiving valuable input from district staff who work at the policy level as well as those staff who directly implement the program. The ARB also received valuable input regarding key policy issues from an advisory group chaired by ARB Board Member Sandra Berg. Moreover, input was also received from interested parties during the three public workshops held by ARB in different areas of the State as well as the numerous workgroup meetings convened to develop specific program details.

These 2008 Carl Moyer Program Guidelines have been updated to reflect current technical information and regulatory requirements for vehicles, equipment, engines, and other pollution sources in California. The administrative procedures have been clarified and streamlined for easier use by the implementing air districts while at the same time maintaining the program's core principles of achieving emission reductions that are creditable in the State Implementation Plan. Such administrative procedures also incorporate recommendations made by State auditing agencies (the Department of Finance Office of State Audits and Evaluations and the Bureau of State Audits) to increase program specificity and oversight. In order to improve clarity to districts and applicants, each source category chapter is written to focus on the more common projects. A new off-road equipment replacement category has been added as well, allowing Carl Moyer Program funding for accelerating the turnover of old, highly-polluting off-road equipment and replacing such equipment with newer, cleaner equipment. 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. In addition, the cost-effectiveness cap has been updated to account for inflation.

These 2008 Guidelines affect Carl Moyer Program projects beginning with those funded with fiscal year 2008/2009 funds. Districts may also choose to utilize these Guidelines for certain projects funded with fiscal year 2007/2008 funds.

The Carl Moyer Program continues to be immensely popular, with the demand for grants typically outstripping available funds in spite of a large expansion in funding in recent years. As a mature program, the Carl Moyer Program has served as a model for designing other incentive programs, most notably the ARB's Goods Movement

Emission Reduction Program. Part of the Carl Moyer Program's success has been its ability to change and adapt, meeting a variety of new challenges as they arise. These 2008 Guidelines address a number of challenges, e.g., balancing a desire for program simplicity with the need for accountability, and identifying possibilities for surplus emission reductions while new regulations decrease the opportunities for achieving such reductions. These Guidelines also incorporate new approaches such as fleet modernization for off-road equipment. ARB is committed to continue to remain responsive to the challenges facing air pollution control and, consequently, to continue to update and improve the Carl Moyer Program Guidelines to reflect future changes.

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THE CARL MOYER PROGRAM GUIDELINES

PART I of IV

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 unhealthful 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.

These proposed 2008 Carl Moyer Program Guidelines update the program to reflect current technical information and regulatory requirements for vehicles, equipment, engines, and other pollution sources in California. The administrative procedures have been clarified and streamlined for easier use by the implementing air districts. In order to improve clarity to districts and applicants, each source category chapter is written to focus on the more common projects. A new off-road equipment replacement category has been added as well. 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 2008 Guidelines affect Carl Moyer Program projects beginning with those funded with fiscal year 2008/2009 funds. Districts may also opt to utilize these Guidelines for projects funded with fiscal year 2007/2008 funds.

I. 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 7 years, the Carl Moyer Program provided $170 million to fund the clean-up of about 7,500 engines, resulting in about 24 tons per day (tpd) of oxides of nitrogen (NO_x) and one tpd of particulate matter (PM) emission reductions throughout California.

The Carl Moyer Program offers critical emission reductions that are needed to achieve health-based air quality standards and reduce toxic diesel PM emissions. Although the Program has evolved, 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.

The Carl Moyer Program has been successfully implemented through the cooperative efforts of the Air Resources Board (ARB or "Board") and the local air pollution control and air quality management districts ("air districts" or "districts"). Each year, the ARB makes grant awards to air districts that apply for Carl Moyer Program funds to

implement local programs. The air districts, following the Guidelines criteria approved by the Board, provide grants to public and private entities for the incremental cost of cleaner-than-required engines and/or equipment. In implementing the Carl Moyer Program, local districts enjoy considerable flexibility. For instance, districts may impose additional or more stringent eligibility requirements for projects in their districts. Districts may also focus their funds on specific project categories in order to coordinate with other incentive funds such as Goods Movement Emission Reduction Program bond funds, funds generated from Department of Motor Vehicle fees, and other 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.

A. 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 enacted in 1999 formally established the statutory framework for the program [Health and Safety Code (HSC) section 44275, et seq]. The program initially focused on reducing NO_x 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 requires local districts with a population of over one million to expend 50 percent of Carl Moyer Program funds for projects that operate or are based in environmental justice areas (HSC section 43023.5).

Legislation enacted in 2004 – Assembly Bill (AB) 923 and Senate Bill (SB) 1107 – provided increased and continued funding, and significantly expanded 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 HSC section 39011.5(a). AB 923 also expanded the Carl Moyer Program from a NO_x - focused incentive program to include projects that also reduce reactive organic gases (ROG) and 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 NO_x and/or PM_{10} emissions through the replacement of old trucks.

Legislation enacted in 2005 (SB 467) requires 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 increases allowable expenditures for district program administration from 2 percent 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 will enable ARB and the districts to improve program accessibility, efficiency and accountability.

The ARB has revised the Guidelines several times to address these legislative changes. The proposed 2008 revision would be the fifth edition of the Carl Moyer Program Guidelines.

B. 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 Carl Moyer Program 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 3 years to ensure that the program does not fund actions taken to comply with regulatory deadlines. The 3-year life helps ensure the overall cost-effectiveness of the program. 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 (or for some categories the U.S. Environmental Protection Agency or International Maritime Organization) 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.

II. 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 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 totaling up to $141 million annually:

Smog Check 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 about $60 million in annual funding for the program (HSC section 44091.1). This legislation does not have a sunset date.

Tire Fee – AB 923 adjusted the tire fee that is assessed on purchasers of new tires from $1.00 per tire to $1.75 per tire (Public Resources Code, section 42885). The adjustments to the tire fee translate to about $25 million available for the Carl Moyer Program. This legislation sunsets in 2015.

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:

- Projects eligible for grants under the Carl Moyer Program.
- The new purchase of school buses pursuant to the Lower-Emission School Bus Program.
- An accelerated vehicle retirement or repair program.
- The new purchase, retrofit, repower, or add-on equipment for previously unregulated agricultural sources of air pollution, for a minimum of three years from the date of adoption of an applicable rule or standard, or until the compliance date of that rule or standard, whichever is later. The ARB calls this program the "Agricultural Assistance Program." The funding criteria for the Agricultural Assistance Program are located in Part II of this document.

If each eligible district adopted the $2 increase, this fee could provide up to $55 million in program funds directly to local air districts. To date, 17 air districts have adopted the 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 HSC section 44299.2.

III. 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, and a detailed discussion of

the types of projects funded over the program's first 6 years can be found in *The Carl Moyer Program 2006 Status Report* [ARB 2007].

Engine repower means the replacement of an existing engine with a new, emission-certified engine instead of rebuilding the existing engine to its original specifications.

Retrofit means the installation of a verified emission control system on an existing engine. Examples include, but are not limited to, diesel particulate filters and forklift catalyst systems.

New purchases of vehicles or equipment certified to optional, lower emission standards are fundable. 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.

Fleet modernization (or equipment replacement) refers to the replacement of an older truck or piece of equipment that still has remaining useful life with a newer, cleaner truck or piece of equipment. The old vehicle/equipment is scrapped. On-road heavy-duty vehicle fleet modernization is an existing eligible, project category. Off-road equipment replacement is proposed as a new category in the 2008 Guidelines.

Vehicle retirement (or car scrap) refers to paying light duty-vehicle owners to voluntarily retire older, more polluting vehicles that still have remaining useful life earlier than they would have otherwise.

More details on eligible project types can be found in Chapters 3 through 11 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 local district for additional solicitation material, program brochures, and to discuss potential Moyer projects.

IV. Summary of Proposed Changes

A. Program Administration

To ensure the best use of public funds and continued public confidence, the Carl Moyer Program must have clearly defined administrative responsibilities and oversight. ARB staff is proposing to refine program administration criteria to simplify and streamline requirements where possible while at the same time maintaining the program's core principles for attaining SIP-creditable emission reductions.

The proposed changes address recommendations contained in the Department of Finance's (DOF) and the Bureau of State Audits' (BSA) evaluations of the Carl Moyer Program. [DOF, 2006 and BSA, 2007]. The DOF evaluation in particular provided

specific recommendations for areas of increased specificity in program administration protocols.

B. Interaction With Goods Movement Emission Reduction Program

The Goods Movement Emission Reduction Program is a $1 billion bond program created by voter-approved Proposition 1B in 2006 and clarified by SB 88 (Statutes of 2007). The program provides grants to equipment owners to upgrade to cleaner technologies in order to reduce emissions associated with the movement of freight along California's four major trade corridors: Los Angeles/Inland Empire, Central Valley, Bay Area, and San Diego/Border Region. Targeted emission sources include the trucks, locomotives, ships, harbor craft and cargo-handling equipment that transport goods through these corridors. The Board will consider proposed guidelines for implementing the Goods Movement Emission Reduction Program in February 2008 [ARB, 2008]. More information on the Goods Movement Emission Reduction Program can be found on ARB's website at: http://www.arb.ca.gov/bonds/gmbond/gmbond.htm

In order to best utilize State incentive funds, ARB staff took a number of factors into consideration to enable the Carl Moyer Program and the Goods Movement Emission Reduction Program to complement each other to the maximum extent possible. One consideration is that, while there is some overlap in the source types that can potentially be funded under the two programs, the Goods Movement Emission Reduction Program has more funds focused on specific source categories and regions of the State than the Carl Moyer Program. Another consideration is that, pragmatically, Goods Movement Emission Reduction Program funds cannot be combined with Carl Moyer Program funds. Changes to the Carl Moyer Program Guidelines thus include provisions to direct some projects that are eligible for the Goods Movement Emission Reduction Program to bond funding first, and only provide the opportunity for Carl Moyer Program funding if bond funding is not available. At the same time, these are two separate programs with different underlying statutory requirements, so the two programs cannot be completely aligned.

A summary of proposed changes to the Carl Moyer Program project eligibility for categories also covered in the Goods Movement Emission Reduction Program is presented below, along with the amount of funding targeted by the bond for each source category:

Port Trucks ($400 million): Port truck projects are directed to the Goods Movement Emission Reduction Program in order to ensure that the significant amount of funds allocated by the bond to this source category is expended quickly and efficiently. The bond program also has more flexibility to utilize other sources of funds (such as port funds) to help subsidize a greater portion of a new truck purchase. Port truck projects may be eligible for Carl Moyer Program funding if bond funding for such projects becomes exhausted.

Other Heavy-Duty Trucks ($360 million): The Goods Movement Emission Reduction Program and Carl Moyer Program may both fund other heavy-duty truck projects. However, for fleet modernization projects, the Carl Moyer Program may only fund replacement of pre-1991 model year trucks, while the bond allows for replacement of 2003 and older model year trucks.

Locomotives ($100 million): Locomotive new purchase and remanufacture/repower projects at Class 1 railroads (the largest railroads) in the four California goods movement corridors are directed to the Goods Movement Emission Reduction Program. These are eligible for the Carl Moyer Program on a case-by-case basis if bond funding is unavailable. Projects for Class 3 railroads (the smallest railroads) and passenger railroads remain eligible for Carl Moyer Program funding.

Shore Power Projects ($100 million): Since passenger vessels (e.g., cruise ships) do not participate in goods movement, shore power projects at passenger vessel berths are eligible for Carl Moyer Program funding and not bond funding. However, shore power projects for cargo vessels at ports within the four California goods movement corridors are directed to the Goods Movement Emission Reduction Program. Cargo vessel berths are eligible for the Carl Moyer Program if bond funding is unavailable.

Harbor Craft ($40 million): Eligibility for harbor craft projects to participate in the Carl Moyer Program is not impacted by the Goods Movement Emission Reduction Program.

C. Off-Road Equipment Replacement

ARB staff is proposing to add a new project type – off-road equipment replacement. The off-road equipment replacement program is intended to obtain emission reductions by replacing old, highly-polluting construction, agriculture, and forklift equipment with newer, cleaner equipment earlier than would have been expected through normal attrition.

Repowers have been the most common project type for off-road equipment. However, repowers are not a practical option for all equipment types. Some smaller pieces of equipment cannot be repowered because a newer, emission controlled engine does not physically fit into the older piece of equipment. For others, the diminished value of the old equipment may not justify investing significant funds for engine replacement. Equipment replacement offers a possible Carl Moyer Program funding opportunity in these cases.

The proposed off-road equipment replacement project criteria are based on the general principles developed for the existing on-road heavy-duty vehicle fleet modernization category. Specific criteria have also been included to address requirements of Senate Bill 467.

D. Adopted Regulations

The Carl Moyer Program funds projects that are early, or surplus, to regulatory requirements. Each time ARB adopts a new regulation for a source covered under the program, it affects Carl Moyer Program eligibility. The proposed 2008 Carl Moyer Program Guidelines update the project criteria for each relevant source category to reflect the new regulations adopted since the previous revision to the Guidelines.

As part of past Guideline revisions, to ensure that the Guidelines remain in sync with ARB regulations, the Board has directed the Executive Officer to develop and approve future technical amendments to the Guidelines (known as Program Advisories) to reflect new regulatory requirements. ARB staff is proposing that the Board continue to delegate this authority to the Executive Officer.

ARB staff is also committed to ensuring that the potential Carl Moyer Program impacts of proposed regulations are evaluated in the regulatory staff report, so affected stakeholders and the Board are aware of how the proposed regulation affects Carl Moyer Program funding opportunities. This will enable interested parties to be more fully informed of all the impacts of a proposed regulation. It will also help individuals make decisions regarding the timing and scope of a potential Carl Moyer Program project to ensure its emission reductions remain surplus.

E. Changes to Existing Source Categories

In addition to the changes discussed above, a number of other changes are proposed for the existing source categories.

Project Criteria for New Project Types: In addition to the new equipment replacement program, staff is proposing specific project criteria for several other new project types. For the marine vessels category (Chapter 9), staff is proposing new project criteria for zero-emission shore side power projects (also known as cold ironing). Previously, these projects had been allowed on a case-by-case basis, but interest in Carl Moyer Program funding for shore power projects has been limited. Due to concerns about increased emissions from oceangoing vessels at California ports as well as increased regulatory efforts, the demand for Carl Moyer Program funding for these projects is expected to increase. For the agricultural sources category (Chapter 10), staff is proposing that non-engine agricultural projects be eligible for funding with approval from ARB on a case-by-case basis. Finally, for large spark-ignited equipment, staff is explicitly proposing that retrofit projects be eligible for funding.

Emission Factor Tables: Staff is proposing to update the tables used in calculating emission reductions of projects to reflect ARB's latest emission inventory data. Appendix B contains the updated emission tables.

Incremental Cost Calculation: The Carl Moyer Program pays for the incremental cost of cleaner technologies. As a way to streamline the application and review process, staff

is proposing to set incremental cost as a percent of total project cost instead of requiring a price quote for an engine rebuild (in the case of repower projects) or conventional vehicle (in the case of new purchase projects) to establish the baseline cost.

F. Cost-Effectiveness Limit

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 to reflect inflation.

The proposed Guidelines would adjust the cost-effectiveness cap from $14,300 to $16,000 per weighted ton of emissions reduced to account for an approximately 11 percent inflation rate from 2004 to December 2007. The inflation number is based on the California Consumer Price Index [CA DIR, 2007]. A discount rate of 4 percent 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 U.S. Treasury securities, averaged from July 2007 through December 2007, with a 3-year, 5-year, 7-year, and 10-year maturation [U.S. FRB, 2007].

Additional details on calculating cost-effectiveness can be found in Appendix C: Cost-Effectiveness Calculation Methodology.

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Chapter 2: GENERAL CARL MOYER PROGRAM CRITERIA

The project criteria listed below applies to all Carl Moyer Program projects. Additional project criteria are located in the relative source category chapters. Projects must also conform to the project application, contract, reporting, and other requirements as described in Part III of these Guidelines: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) Emission reductions obtained through Carl Moyer Program 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.

(b) The local air district or ARB Governing Board 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 emission reductions.

(c) 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.

(d) No project funded by the Carl Moyer Program shall be used for credit under any federal or State emission averaging banking and trading program.

(e) Engines operating under a regulatory compliance extension granted by the ARB, a local district, or the U.S. EPA are not eligible for funding.

(f) Projects funded by the Carl Moyer Program may not be used to generate a compliance extension or extra credit for determining regulatory compliance.

(g) A biodiesel blend fuel consisting of not more than 20 percent biodiesel may be used with a retrofit device verified under Title 13, CCR, Sections 2700 through 2710, as long as the verification was based upon use of commercial diesel fuel and the retrofit is ARB-verified to reduce PM but not NOx. Carl Moyer Program participants which use other biodiesel blends or whose project is not a verified NOx-only retrofit project must determine if the use of biodiesel will negate their engine, vehicle, or equipment warranty. Grantees using a biodiesel blend not explicitly allowed by the project engine, vehicle, or equipment warranty (with the exception of NOx-only retrofit projects) are responsible for repairing or replacing the project engine, vehicle, or equipment should it malfunction due to use of this fuel.

(h) Projects must meet a cost-effectiveness of $16,000 per weighed ton of NOx, ROG, and PM10 reduced calculated in accordance with the cost-effectiveness methodology in Appendix C. All State funds plus any other funds under a district's budget authority or fiduciary control contributed toward a project must be included in the cost-effectiveness calculation.

(i) Carl Moyer Program grants can be no greater than a project's incremental cost. The incremental cost is generally expressed as the percent of the total project cost in each source category chapter of these Guidelines. The incremental cost shall be reduced by the value of any current financial incentive that reduces the project price, including tax credits or deductions, grants, or other public financial assistance. This includes but is not limited to Proposition 1B Goods Movement Emission Reduction Bond funds, Environmental Quality Incentive Program funds, or Federal Transportation Authority funds. Port funds contributed to a project are not considered public financial assistance and are not included in the project cost-effectiveness calculation except to the extent that such funds are used to meet the program match requirement.

(j) Projects must have a minimum project life of three years, except for engines subject to the Stationary Diesel In-Use Agricultural Engine Airborne Toxic Control Measure, which must have a minimum project life of one year.

(k) The contract term must extend to the end of the project life.

(l) The new engine/vehicle/equipment must remain in service for the project life.

(m) 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).

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

(o) 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.

(p) Carl Moyer Program projects must meet requirements applicable to that project category found in the applicable source category chapter of these Guidelines.

(q) Potential projects that do not meet all of these criteria may be approved by the ARB on a case-by-case basis if the project is demonstrated to achieve surplus, real, quantifiable and enforceable emission reduction benefits in California for the full project life. Additional information regarding approval of case-by-case projects is found in Part III, Section 28 of these Guidelines.

Chapter 3: ON-ROAD HEAVY-DUTY VEHICLES

This chapter describes the minimum criteria and requirements for Carl Moyer Program on-road heavy-duty vehicle (HDV) projects, excluding fleet modification (see Chapter 4). Local air quality management or air pollution control districts may set more stringent requirements based upon local priorities. Definitions of HDV terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

ARB has adopted many fleet rules that affect on-road heavy-duty diesel-fueled vehicles (see section III of this chapter). There is limited funding opportunities for vehicles subject to these rules.

Table 3-1
Summary of On-Road Heavy-Duty Funding Opportunities

Vehicle Type	Subject to ARB Fleet Rule?	Moyer Funding Opportunities[1]
Urban buses	Fleet Rule for Transit Agencies	Very limited funding opportunity
Transit Fleet Vehicles		
Solid Waste Collection Vehicles, excluding transfer trucks	Solid Waste Collection Vehicle Regulation	Limited opportunities for NOx
Transport Refrigeration Units (TRU)	TRU Air Toxic Control Measure (ATCM)	Limited opportunity
Auxiliary Power Units (APU)	Idling ATCM	Limited opportunity, incremental only
Municipal Vehicles and Utility Vehicles	Fleet Rule for Public Agencies and Utilities	Low-population Counties: Some funding through 2017 All other counties: Some funding through December 2008
Port and Drayage Trucks	Port Truck Regulation	Very limited funding opportunity Proposition 1B funding available
All other On-road heavy-duty vehicles	NO	Proposed regulation scheduled for late 2008[2]

[1] Limited opportunities means a fleet's compliance status with the ARB regulation must be determined. Contact district Carl 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] Proposed on-road private fleet regulation is due to be considered for adoption by the board late 2008. This regulation will require all vehicles not currently subject to an ARB regulation to meet the 2007 emission standards of 1.2 g/bhp-hr NOx and 0.01 g/bhp-hr PM. Please see "project types" for further details.

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

- **Fleet Modernization Projects (Truck Replacement)**
  The majority of funding opportunities for on-road heavy-duty trucks is available through Fleet Modernization. Please see Chapter 4 for Fleet Modernization eligible projects and criteria.

- **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 1.2 g/bhp-hr NOx emissions standard. Currently, engines that meet this standard are family emission limit (FEL) engines, and are ineligible for funding for new vehicle purchases. Also, as CNG and diesel emissions become ever closer, the emission benefit associated with CNG decreases. Funding for these projects may still be provided under the Fleet Modernization program.

- **Repower Existing Vehicle:** Repower with a engine cleaner than that currently in the vehicle. The proposed on-road private fleet rule will require all vehicles not currently covered by a fleet regulation to meet 1.2 g/bhp-hr NOx emissions by December 2013. Carl Moyer will only fund repowers to engines or systems that meet this standard to help ensure funds are not used to pay for non-compliant engines. Due to technological constraints presented with the newer technology engines fitting into older chassis, staff has determined that funding opportunities will be limited.

- **Retrofit Purchase:** The installation of a verified diesel emission control strategy. Retrofits are required by or proposed for all on-road heavy-duty diesel vehicles in California. Funding is limited for retrofits that provide early or extra emission reductions to the regulations.

- **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.

- **Idling Reduction:** Idle reduction projects include electric auxiliary power units, as well as truck stop electrification for both on-board and off-board infrastructure.

Please see Section IV (Project Criteria) for detailed minimum eligibility requirements. Solid waste collection vehicles, public fleets, and transit agencies may be subject to more stringent requirements as described in Section III.

II. Maximum Eligible Funding Amounts

The Carl Moyer Program pays only the incremental cost of clean air projects. Table 3-2 summarizes the maximum percent of total project costs eligible for Carl Moyer Program

funding for different project types. On-road heavy-duty vehicle projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. These projects must also meet all other relevant criteria in Section IV of this chapter.

Table 3-2
Maximum Percent Funding for Carl Moyer On-Road Vehicle Projects

Project	Maximum Eligible for Carl Moyer Program Funding
New Vehicle Purchase	25 percent
Vehicle Repower	80 percent
Retrofit	100 percent
TRU Retrofit	100 percent
Idling Reduction Retrofit	100 percent

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program HDV projects must therefore be surplus to the following to be eligible for funding:

In-use Regulations

- Fleet Rule for Transit Agencies:
  Originally adopted February 2000, this regulation requires that transit fleets meet fleet-wide reductions for emissions of both NOx and particulate matter for both urban buses and transit fleet vehicles. Projects that reduce emission beyond that required by the regulation may be eligible for funding.

  Urban Bus: An urban bus is a passenger-carrying vehicle powered by a heavy heavy-duty or urban bus diesel engine, generally greater than 35 feet long, used for intra-city operation characterized by short rides and frequent stops.

  Transit Fleet Vehicles: Transit Fleet Vehicles (TFVs) are on-road vehicles greater than 8,500 pounds GVWR powered by a heavy-duty engine fueled by diesel or alternative fuel, owned or operated by a transit agency, which is not an urban bus. TFVs include, but are not limited to, commuter service buses, cutaways, tow trucks, and maintenance vehicles.

  The Fleet Rule for Transit Agencies is an in-use and new vehicle purchase regulation that requires transit agencies that own, operate or lease urban buses and transit vehicles to choose a diesel-fuel or alternative fuel path and follow the requirements as described for each fuel path.

  For more information about the Fleet Rule for Transit Agencies, go to: http://www.arb.ca.gov/msprog/bus/bus.htm.

- Solid Waste Collection Vehicle (SWCV) Regulation:
  ARB adopted the "Diesel Particulate Matter Control Measure for On-road Heavy-duty Diesel-fueled Residential and Commercial Solid Waste Collection Vehicles" on September 2003.

  The rule applies to owners of SWCVs or those diesel-fueled trucks over 14,000 pounds GVWR with 1960 through 2006 model year engines used to collect residential and commercial solid waste. The regulation does not apply to transfer trucks. The rule requires that fleets reduce diesel PM following a phase in compliance schedule based on engine model year. Due to the compliance deadlines opportunities for funding may be limited, since only NOx reductions are surplus at this time.

  For more information about the Solid Waste Collection Vehicle Regulation, go to: http://www.arb.ca.gov/msprog/SWCV/SWCV.htm.

- Transport Refrigeration Units (TRU):
  Adopted in February 2004, this ATCM sets in-use performance standards for diesel particulate matter emissions from TRUs. Beginning in 2008, this regulation will use a phased in approach to reduce diesel PM emissions from in-use TRUs and TRU generator sets operated in California.

  A TRU is a refrigeration system powered by an integral internal combustion engine designed to control the environment of temperature sensitive products that are transported in trucks and refrigerated trailers. TRUs may be capable of both cooling and heating. A TRU generator set is designed and used to provide electric power to electrically driven refrigeration units of any kind.

  For more information about TRU performance standards, go to: http://www.arb.ca.gov/regact/trude03/fro1.doc.

- Reducing Idling Emissions from Heavy-Duty Vehicles:
  Adopted October 2005, this Airborne Toxic Control Measure (ATCM) limits the idling of the main engine to five minutes when health, safety, or operational concerns are not an issue. These requirements apply to California and out-of-state trucks.

  In addition, ARB approved an ATCM that prohibits, beginning January 1, 2008, heavy-duty trucks with sleeper berths from idling more than five minutes unless certain conditions are met. Electric projects are eligible. However, there is limited funding due to the rule.

  For more information about restrictions on heavy-duty vehicle idling, go to: http://www.arb.ca.gov/regact/hdvidle/frorev.pdf.

- Fleet Rule for Public Agencies and Utilities:
  ARB adopted the "Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel-Fueled Vehicles Owned or Operated by Public Agencies and Utilities" on December 2005, which affects eligibility for municipal and utility projects.

  The regulation applies to any municipality or utility that owns, leases, or operates a on-road diesel-fueled heavy-duty vehicle with a manufacturer's gross vehicle weight rating (GVWR) greater than 14,000 pounds powered by a 1960 through 2006 model-year medium heavy-duty or heavy heavy-duty engine. The rule requires that fleets reduce diesel particulate matter with a phased in compliance schedule based on engine model year and county population for which the vehicle and the agency resides.

  Projects that may be eligible for funding provide emission reductions that are surplus to the regulatory requirements. However, due to the compliance deadlines and typical low usage of public fleet vehicles, opportunities for funding may be limited.

  For more information about the Fleet Rule for Public Agencies and Utilities, go to: http://www.arb.ca.gov/msprog/publicfleets/publicfleets.htm.

- Port Truck Regulation: Presented to the Board for consideration December 2007. The on-road heavy-duty, drayage, port, and intermodal rail yard regulation reduces emissions of diesel particulate matter and oxides of nitrogen from drayage trucks that operate at ports and intermodal rail yards in California. Motor carriers that dispatch drayage trucks, port terminals and rail yards, port and rail authorities, drayage truck drivers, and drayage truck owners are subject to and have responsibilities under this regulation.

  The regulation sets requirements in two phases for drayage trucks that operate at California ports and intermodal rail yards located within 80 miles of ports. By December 31, 2009, Phase 1 would achieve substantial near-term PM reductions to reduce adverse health affects in nearby local communities. Phase 2 would achieve additional emission reductions by December 31 2013 that are necessary for the State to meet its SIP commitments in federal non-attainment areas.

  Projects that may be eligible for funding provide emission reductions that are surplus to the regulatory requirements. However, due to the compliance deadlines opportunities for funding may be limited.

  For more information about the port truck regulation, go to: http://www.arb.ca.gov/msprog/onroad/porttruck/porttruck.htm.

- Upcoming Regulation for On-Road Heavy-Duty Vehicle In-Use Regulation
  ARB is currently developing a heavy-duty on road fleet rule scheduled for Board consideration late 2008. This rule will impact eligibility for 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.

The purpose of the regulation is to reduce emissions of diesel particulate matter, oxides of nitrogen and other criteria pollutants, and green house gases from in-use on-road diesel-fuel vehicles. Reductions will take place in two phases, beginning in 2010 and ending in 2021.

Projects that may be eligible for funding provide emission reductions that are surplus to the regulatory requirements. However, due to the compliance deadlines opportunities for funding may be limited.

For more information on the proposed on-road heavy-duty vehicle regulation, go to: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm.

Emission Standards

Engine emission standards have progressively and substantially reduced NOx and PM emissions from HDVs. Table 3-2 lists the existing and future NOx and PM emission standards for heavy-duty engines as found in Title 13, California Code of Regulations (CCR), section 1956.8 [ARB, 2002a]. Urban buses have a separate set of emission standards (title 13, California Code of Regulation, section 1956.1) which are now aligned with those for heavy-duty vehicles.

Table 3-3
Emission Standards for Heavy-Duty Diesel Engines
(g/bhp-hr)

Model Year	NOx	PM
2007	1.2[1]	0.01
2010	0.2	0.01

[1] Between 2007-2009, U.S. EPA requires 50 percent of heavy-duty diesel engine family certifications to meet the 0.2 g/bhp-hr NOx standard. Averaging is allowed, and it is expected that most engines will conform to the fleet NOx average of approximately 1.2 g-bhp/hr.

IV. Project Criteria

The project criteria listed below for on-road heavy-duty vehicles provide the districts, fleet operators, transit agencies, and applicants with the minimum qualifications for the Carl Moyer Program. On-road projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) General On-Road Heavy-Duty Vehicle Project Criteria

(1) Maximum project life for on-road projects are as follows:

(A)	Buses ≥ 33,000 GVWR - New	12 years
(B)	Other On-road - New	10 years
(C)	Repower Only (No Retrofit)	7 Years
(D)	Repowers + Retrofits	5 years
(E)	Retrofits	5 years

A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider upcoming regulatory requirements and may be shorter.

For Fleet Modernization project life, see Chapter 4.

(2) On-road heavy-duty diesel vehicles with a GVWR between 8,501 and 14,000 pounds may be considered for Carl Moyer Program funding for new, repower and retrofit projects on a case-by-case basis.

(3) Emission reduction technologies must be certified/verified by the ARB for sale in California and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

(4) To receive funding through the Carl Moyer Program, all engines in the fleet that are eligible for a low NOx software upgrade (reflash) must be reflashed within 60 days of receipt of payment. The fleet owner/operator may self-certify to the local 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 district. Most heavy heavy-duty, and some medium heavy-duty 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.

(5) On-road calculations shall be based on projected annual mileage instead of fuel usage, due to the fact that the exhaust emission factors are more robust. Fuel based calculations may be used only if documentation of previous fuel use and mileage records are submitted to the district with the application that show the project to be at least 30% 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.

(6) When the model year of the vehicle chassis (or glider kit) and the model year of the existing engine are different, the newer of the two model years, either the vehicle or the engine, shall be used to determine the baseline emissions for calculations.

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

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

(9) Refuse vehicles and street sweepers often have two engines, one for motive power and one for auxiliary operations. 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 emissions can be determined. Factors such as fuel economy, typical operating loads, and hours of operation for each engine must be provided.

(10) Case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements as described in Part III, Section 28.

(b) Compliance Check

After the district receives an application for any on-road repower or retrofit project but before the district pays for a project, the district must submit information regarding the project to ARB to check for outstanding violations. For compliance check requirements, please see Chapter 4 (Fleet Modernization), Section I.

(c) New Purchase

Non-fleet modernization new vehicle purchases are not a common funding category. Due to tighter standards, new purchase projects are only eligible for minimal grant amounts. Currently, most engines certified for use in California are certified as FEL (family emission limit) engines and are not eligible for funding for new vehicle purchases. New purchase will be considered only on a case-by-case basis.

(1) The maximum percent of new purchase cost eligible for Carl Moyer Program funding is: 25 percent

(2) The contract for funding 2008 – 2009 projects must be fully executed by December 31, 2009 and the equipment must be in service by June 30, 2010, 6 months after the new 2010 0.2 g/bhp-hr NOx emission standard takes effect.

(d) Repower

A repower is the replacement of an in-use engine with an emission-certified engine instead of rebuilding the existing engine to its original specifications. To help ensure funds will not pay for non-compliant engines, the Carl Moyer guidelines are aligned with the proposed private on-road fleet regulation, which would require vehicles meet Model Year 2007 1.2 g/bhp-hr NOx and 0.01 g/bhp-hr PM emissions standards by December 31, 2013. Therefore, replacement engines for repower projects must be an ARB certified engine meeting at least or equivalent to the Model Year 2007 1.2 g/bhp-hr NOx and 0.01 g/bhp-hr PM emissions standards. Due to technological constraints presented with the newer technology engines fitting into older chassis, staff has determined that funding opportunities will be limited. Repower projects will be evaluated on a case-by-case basis.

(1) The maximum percent of repower cost eligible for Carl Moyer Program funding is: 80 percent

(e) Retrofit

Retrofit is the installation of a verified diesel emission control system on an existing engine. The Carl Moyer guidelines are aligned with the proposed private on-road fleet regulation to ensure retrofit projects reduce emission in excess of that which will be achieved by the proposed regulation. Please refer to Appendix F for more detailed discussion on retrofits. More information on retrofits, including a list of currently verified retrofits, may be found at http://www.arb.ca.gov/diesel/verdev/verdev.htm.

(1) The percent of retrofit cost eligible for Carl Moyer Program funding is: 100 percent

(2) Retrofits for on-road heavy-duty vehicles not subject to a current on-road fleet regulation are eligible for funding up to and no later than December 31, 2008. After December 31, 2008, projects may be considered on a case-by-case basis.

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

(4) 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.

(5) 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.

(6) Fleets/agencies affected by upcoming 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.

(7) If the retrofit device reduces both NOx and PM emissions and is being installed to comply with a PM requirement, only the cost of the NOx reductions are eligible for Carl Moyer Program funding. For retrofit projects that only take credit for NOx reductions from a Level 3 DECS, the baseline cost is ½ the cost of the retrofit project.

(8) From 2008 to 2009, retrofits of urban buses and transit fleet vehicles will be considered on a case-by-case basis. Applicants must provide documentation that the retrofit will not be used to off-set a new diesel urban bus purchase.

(9) The full cost of a retrofit kit and maintenance of the retrofit during the project life may be funded subject to the weighted cost-effectiveness limit.

(10) Only the minimum ARB verified levels of NOx and PM10 emission reductions will be used to calculate cost-effectiveness for retrofit projects.

(11) The baseline cost for retrofit projects claiming both PM and NOx is zero ($0). The full cost of a retrofit is potentially eligible for funding.

(f) Fuel

(1) Carl Moyer Program funds cannot be used for fuel projects, however funds under a district's budgetary authority or fiduciary control (i.e. 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 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 a district.

(g) Port and Drayage Trucks

(1) The ARB adopted the fleet rule for in-use heavy-duty diesel-fueled vehicles that operate at port and intermodal rail yards in December 2007. Because of compliance requirements, there are limited opportunities available for port and drayage trucks and for minimal grant amounts. Projects may be available and considered on a case-by-case basis. Proposition 1B funding may be a more suitable funding source for this category.

(h) Private Fleets

(1) Currently, most in-use heavy-duty trucks, or heavy-duty vehicles designed to carry an entire load such as long-haul, short-haul, delivery, and construction trucks, are not subject to any fleet rules. The ARB is developing a fleet rule for

in-use heavy-duty diesel-fueled vehicles that is tentatively scheduled to be presented to the Board in late 2008. If approved, it will affect project criteria for in-use heavy-duty diesel-fueled vehicle projects.

(i) Public Agency and Utility Fleets

(1) Projects are subject to the general program criteria listed above.

(2) 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 the rule's requirements.

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

(4) For counties that have a population greater than 125,000: Due to the regulatory compliance deadlines, few funding opportunities remain for technologies that reduce diesel particulate matter in vehicles powered by 1960 through 2006 MY engines, and will expire completely after 12/31/2008.

(5) Low-Population County fleets (counties with a population of less than 125,000) or those that have qualified for Low-Population County status, have two options for compliance: accelerated turnover option or BACT implementation schedule for Low-Population Counties. Low-Population County fleets must declare with submittal of their application which compliance path they will follow. Funding opportunities exist for all model year vehicles in agencies following the Low-Population County BACT implementation schedule until at least 2013. For agencies following the accelerated turnover option, Carl Moyer funding for repower projects are available through 2017 and for installing verified diesel emission control strategies through 2022.

(6) NOx reductions may be available for funding in retrofit projects, repower projects, and new purchases.

(7) For more information on eligibility for public fleet, please see the On-Road Fleet Carl Moyer Program Implementation Chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(j) School Buses

(1) Currently, school buses are not subject to any fleet rules. ARB is developing a fleet rule for in-use heavy-duty diesel-fueled vehicles that is tentatively scheduled to be presented to the Board in late 2008. If approved, it will affect project criteria for school bus projects. Until board adoption however, the following apply:

(2) School buses are eligible for Carl Moyer Program funding if they meet the general program criteria above; however, their relatively low annual miles traveled usually allows for minimal grant amounts.

(3) School bus calculations shall use the MHD vehicle emission factors and conversion factors to calculate cost-effectiveness.

(k) Solid Waste Collection Vehicles

(1) Projects are subject to the general program criteria listed above.

(2) All MY 1960 – 2006 SWCVs are required to comply with the regulation by December 31, 2010. No funding opportunities for diesel particulate matter reductions remain for these vehicles.

(3) All SWCV projects must submit compliance records as described in the SWCV rule to show that funds will not be used to meet the rule's requirements. The companies must also identify out of which terminal the vehicles potentially receiving Carl Moyer Program funds operate. This information must be submitted with the application. The district and/or ARB will notify applicants if any additional documentation is required.

(4) NOx reductions may be available for funding in retrofit projects, repower projects, and new purchases.

(5) For more information on eligibility for SWCVs, please see the SWCV Fleet Carl Moyer Program Implementation Chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(l) Transit Vehicles (Urban Buses and Transit Fleet Vehicles)

(1) Projects are subject to the general program criteria listed above.

(2) Projects will be considered on a case-by-case basis. Transit agencies are required to submit annual documentation of compliance with the transit fleet rule to ARB. Districts will work with ARB to determine if applicants are in compliance with the regulatory requirements and to ensure that Carl Moyer Program funds will not be used to meet these requirements. Transit agencies are not required to submit any additional regulatory compliance information with the Carl Moyer Program application and will be notified if districts and/or ARB require additional documentation.

(3) Transit Fleet Vehicles: The Fleet Rule for Transit Agencies specifies compliance dates for those fleets established before January 1, 2005 and for those established after January 1, 2005. If the fleet provides documentation that demonstrates compliance with regulatory requirements, Carl Moyer Program

funds for purchases of new vehicles, repower and retrofit projects may be available.

(4) Urban Buses: The Fleet Rule for Transit Agencies specifies compliance dates for those urban bus fleets established before January 1, 2002 and for those established after January 1, 2002. If the fleet provides documentation that demonstrates compliance with regulatory requirements, Carl Moyer Program funds for purchases of new vehicles, repower and retrofit projects may be available. These projects may have the default project life.

(5) FTA provides up to an 80 percent grant for new urban bus purchases. For these projects the incremental cost would be the difference between the FTA grant amount and the cost of the reduced technology or baseline technology.

(6) For more information on funding eligibility, please see the On-Road Fleet Carl Moyer Program Implementation Chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(m) Idling Reduction

(1) Projects are subject to the general program criteria listed above.

(2) Heavy-duty trucks with the primary engine model year 2006 and older are eligible for ARB verified retrofit APU funding.

(3) Retrofit projects that control PM must use the highest level technically feasible technology available for the APU.

(4) 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 DECS.

(5) If an internal combustion engine APU is available with an electric plug-in option, the incremental cost of the plug-in option is eligible for Carl Moyer Program funding.

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

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

(8) Advanced truck stop electrification - Carl Moyer Program funds may be used for installing advanced truck stop electrification systems (e.g., IdleAire systems). 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.

(9) Other idle reducing projects may be considered on a case-by-case basis.

(n) Transport Refrigeration Units (TRU)

(1) Projects are subject to the general program criteria listed above.

(2) 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 district upon request.

(3) 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.

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

(5) Funding opportunities may exist to retrofit to a ULETRU level. For more information on funding eligibility for TRUs please see the TRU Carl Moyer Program Implementation chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(o) Cost-Effectiveness Calculation Specific Criteria

(1) Sample calculations that illustrate the methodology for determining emission reductions and cost-effectiveness are included in Appendices C and E.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

For the purposes of the Carl Moyer Program, on-road project definitions are as follows:

APU: 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. These requirements apply to California and out-of-state trucks.

Heavy-duty vehicles (HDV): Defined in the following chart:

Vehicle Classification	GVWR
Light Heavy-Duty (LHD)	8,501 < 14,000 lbs
Medium Heavy-Duty (MHD)	14,001 < 33,000 lbs
Heavy Heavy-Duty (HHD)	33,001 or more lbs

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.

Rebuilt or remanufactured: Engines offered by the original engine manufacturer (OEM) or by a non-OEM rebuilder who demonstrates to the ARB that the rebuilt engine and parts are functionally equivalent from an emissions and durability standpoint to the OEM engine and components being replaced.

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.

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.

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 trucks with components such as engine block heaters, fuel heaters, electric heaters and air conditioning for cab/sleeper areas, requiring the installation of charging infrastructure at truck stops and rest areas.

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.

VII. References

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Chapter 4: ON-ROAD HEAVY-DUTY VEHICLES FLEET MODERNIZATION

This chapter describes the minimum criteria and requirements for Carl Moyer Program on-road heavy-duty vehicles (HDV) fleet modernization projects. Fleet modernization provides incentives to replace old high-polluting heavy-duty vehicles with newer, lower-emission replacement vehicles. The fleet modernization source category provides real emission benefits by retiring the high polluting vehicle earlier than would have been expected through normal attrition. Carl Moyer Program funds for fleet modernization projects are used to offset part of the cost of the replacement vehicle. Local air quality management districts may set more stringent requirements based upon local priorities. Definition of fleet modernization terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

Projects in this category may only be considered in districts that have an approved ARB Fleet Modernization Plan.

All projects that are subject to regulations described in Chapter 3: On-Road Heavy-Duty Vehicles also apply in this chapter. Please see Section IV (Project Criteria) for detailed minimum eligibility requirements. Solid waste collection vehicles, public fleets, port trucks, and transit agencies may be subject to more stringent requirements as described in Section III.

The following HDV fleet modernization projects are eligible for Carl Moyer Program funding. Note: the existing old vehicle must have both engine and chassis of model year 1990 or older. Existing old school buses may have both engine and chassis of any model year.

- **New Replacement Vehicle Purchase.** The purchase of a new 2007 model year or later vehicle or school bus with engine certified to the 2007 and later emission standards to replace the existing vehicle that is to be scrapped.
- **Used Replacement Vehicle Purchase.** The purchase of a used 2007 model year or later vehicle or school bus with engine certified to the 2007 and later emission standards to replace the existing vehicle that is to be scrapped.

II. Maximum Eligible Funding Amounts

The maximum percent total project costs eligible for Carl Moyer Program fleet modernization program funding depends upon fleet size. All eligible vehicles in a fleet of five vehicles or less may receive up to 80 percent to the vehicle cost. All eligible vehicles in a fleet of six vehicles or more may receive up to 50 percent of the vehicle cost. Project participants must certify as to the size of their existing fleet in their project application and project contract. Fleet size is based upon the number of vehicles (inclusive of all heavy-duty vehicle classes and model years) under the fiduciary control of the project participant at the time of project contract execution. The maximum funding percentage is calculated based upon the invoice price for new replacement

vehicles or the National Automotive Dealership Association (N.A.D.A.) retail value for a used replacement vehicle. Fleet modernization projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Local air districts have the authority to set more stringent project requirements. Projects must also meet all other relevant criteria in Section IV of this chapter.

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program fleet modernization projects must therefore be surplus to regulation to be eligible for funding, please see Chapter 3 (On-Road Heavy-Duty Vehicles), Section III (Regulatory Background), for a description of current and future regulations.

- Emission Standards
  Lower engine emission standards combined with natural fleet turnover have progressively and substantially reduced NOx and PM emissions from HDVs. Moyer funds can only be used to pay for replacement that is surplus (early) to natural fleet turnover. Table 4-1 lists the existing and future NOx and PM emission standards for heavy-duty engines as found in Title 13, California Code of Regulations (CCR), section 1956.8 [ARB, 2002a]. Urban buses have a separate set of emission standards (title 13, California Code of Regulation, section 1956.1) which are now aligned with those for heavy-duty vehicles.

Table 4-1
Emission Standards for Heavy-Duty Diesel Engines
(g/bhp-hr)

Model Year	NOx	PM
2007	1.2[1]	0.01
2010	0.2	0.01

[1] Between 2007-2009, U.S. EPA requires 50 percent of heavy-duty diesel engine family certifications to meet the 0.2 g/bhp-hr NOx standard. Averaging is allowed, and it is expected that most engines will conform to the fleet NOx average of approximately 1.2 g-bhp/hr.

IV. Project Criteria

The project criteria listed below for fleet modernization projects provide the air districts, school districts, and applicants with the minimum qualifications for the Carl Moyer Program. Fleet modernization projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) General Criteria

(1) An on-road heavy-duty Class 8 diesel truck fleet modernization project in the South Coast Air Basin, San Joaquin Valley Air basin, Sacramento Federal Ozone Non-attainment Area, San Francisco Area Bay Area Air Basin, and the San Diego and Imperial County air districts (collectively, California's Goods Movement Corridors) are eligible for Carl Moyer Program funding in any fiscal year in which Proposition 1B fleet modernization project incentive funding has been approved to a local agency in the district or is otherwise available. The Proposition 1B funding program and the Moyer fleet modernization program target different truck age categories. The Moyer fleet modernization program focuses on truck model year 1990 and older while the Proposition 1B funding focuses on newer model years. However, please note additional requirements regarding drayage trucks (see subpart 6 below).

(2) Small air districts are allowed to fund fleet modernization projects through a regional program and administered by a designated air district. The designated air district could be either an air district within the regional program or a large district outside of the regional program. A regional fleet modernization implementation plan that contains all the required components as required in an individual district's fleet modernization implementation plan, in addition to detailed description of the funding mechanism among the participating districts, must be submitted by the designated administering air district to the ARB for approval. All 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.

(3) Emission reduction technologies must be certified/verified by the ARB and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

(4) Fleet operators with vehicles in open vocation categories are eligible to receive funding for a maximum of five vehicles. There is no restriction on the number of vehicles per fleet that can be funded for school bus or in targeted vocation categories.

(5) On-road diesel-fueled heavy-duty drayage trucks are eligible only on a case-by-case basis, subject to the ARB's port truck regulation. Other sources of funding that are available to replace heavy-duty drayage trucks include the port truck bond monies Proposition 1B and private funding from Port Authorities.

(6) On-road diesel-fueled heavy-duty trucks that would be subject to the ARB's proposed private fleet rule are not likely to be eligible for Moyer funding, depending on the final regulatory requirements for these trucks, when the proposed rule is adopted. In certain situations, the owners of these trucks may

take advantage of the availability of Proposition 1B bond monies to modernize and replace these older trucks. In other scenarios, these trucks may be considered for funding on a case-by-case basis.

(7) Existing glider kit vehicles are eligible to participate in the fleet modernization category. The replacement vehicle has to be a complete O.E.M. vehicle; i.e., the replacement vehicle cannot be a glider kit. Glider kits are 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". In situations where the model years of the glider kit vehicle's chassis and engine differ, emissions calculations and cost-effectiveness determination shall be made using the newest model year, of either the engine or the chassis as the baseline emission level.

(8) The low emissions technology must be certified and meet the current NOx, PM and/or ROG requirements.

(b) Participant Requirements

The following categories of vehicles are eligible for Carl Moyer Program funding:

(1) Open Category: Vehicles from any vocation or fleet size are eligible for funding provided the participant submits conclusive documentation of annual mileage and vehicle usage in California. The maximum project life is three years.

(2) Targeted Vocation Category: Vehicles operating in agricultural, construction, mining, forestry vocations, and public fleet vehicles in low-population areas as defined in the public fleet regulation adopted by the ARB in December 2005, may apply as a targeted vocation. The participant is required to submit conclusive documentation of annual mileage and vehicle usage in California. The maximum project life is five years.

(3) School Bus Category: The maximum project life for school buses participating in a fleet modernization program is as follows:
- Pre-1977 model year school buses: Five years
- Model year 1977 and newer school buses: Eleven Years

(4) The model years shown above refer to the model year of the old school bus that is being replaced, not the new replacement school bus.

(5) A longer project, except for projects in the Open Category, may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(6) The participant must currently own and operate the old vehicle, documented through a copy of the old vehicle title. If it is unclear whether a vehicle is owned

or leased by a participant, the district will determine whether the vehicle is eligible.

(7) Participants must submit documentation of annual miles traveled for the previous two years to determine cost-effectiveness. Examples of documentation include: logbooks, fuel records, and, maintenance records or tax records.

(8) Copies of California Motor Carrier Permits and permit applications for the last two years. If the participant does not have a Motor Carrier Permit, submit copies of the Department of Motor Vehicle registration and proof of insurance for the old vehicle for the last two years.

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

(10) The participant must be in compliance with air quality laws; all outstanding citations must be paid.

(11) If the requested fleet modernization project is approved for funding, the participant must re-flash all trucks in the fleet that are eligible to have Low NOx Software installed, if any, prior to receiving funding. Also, please refer to corresponding regulations as well as Chapter 3: On-Road Heavy-Duty Vehicles for any additional information.

(12) Proof of vehicle vocation for the last two year is required.

(13) The participant may be required to provide either:

(14) Copies of the participant's United States Internal Revenue Service Form 2290 (Heavy Highway Vehicle Use Tax Return) for the previous two years, or

(15) United States Internal Revenue Service Schedule C.

(16) The district may request any additional information.

(c) Existing Vehicle Requirements

All existing old vehicles must meet the following conditions before funding is awarded to the participant.

(1) Eligible Model Years for Vehicles Other than School Buses – The old vehicle must have both engine and chassis of model year 1990 or older.

(2) Eligible Model Years for School Buses – The existing old school buses may have both engine and chassis of any model year.

(3) The old vehicle must have been registered in California for the previous two years.

(4) The old vehicle participating in the Carl Moyer fleet modernization program must be in operational condition to qualify for funding. Operating condition must be determined through a California Highway Patrol's Biennial Inspection of Terminals (CHP BIT) or equivalent inspection. The inspection must identify any needed repairs and the estimated cost of the repairs. The district will also verify the operating condition of the truck by a visual and operational inspection. If the district cannot conduct a pre-inspection, the ARB may approve one of the following methods on a case-by-case basis: The motor carrier company may submit a completed CHP 90-Day Safety Inspection Form documenting the inspection and the estimated cost of any repairs. A participating dealership or motor company may conduct the inspection of the old vehicle and provide pictures verifying the vehicle condition. The dealer must provide a completed CHP 90-Day Safety Inspection Form and documentation of any necessary repairs. The participant will pay the cost of the inspection.

(5) The motor carrier company may submit a completed CHP 90-Day Safety Inspection Form documenting the inspection and the estimated cost of any repairs.

(6) A participating dealership or motor company may conduct the inspection of the old vehicle and provide pictures verifying the vehicle condition. The dealer must provide a completed CHP 90-Day Safety Inspection Form and documentation of any necessary repairs. The participant will pay the cost of the inspection

(7) Other methods as approved by ARB.

(8) All school buses participating in the Carl Moyer fleet modernization program must have a current CHP safety certification as of December 31, 2005, and at the time funding is awarded to replace the bus (i.e., the school bus cannot have a lapsed CHP safety certification), and must be currently registered with the Department of Motor Vehicles.

(9) If the old vehicle engine tag is missing, the participant may be required to provide a dynamometer printout of the engine horsepower from a participating engine dealership, or another means of obtaining the required information approved by the ARB.

(d) Replacement Vehicle Requirements

All replacement vehicles must meet the following conditions before funding is awarded to the participant.

(1) Model Year: The replacement vehicle must be 2007 model year or newer and must have an engine complying with the 2007 and later emission standards and must be certified to a PM emission standard of 0.01 g/bhp-hr.

(2) Replacement vehicles (2007 model year and later) with engines certified to a PM emission standard of 0.01 g/bhp-hr and a NOx or NOx+NMHC FEL level of 1.2 g/bhp-hr or lower are eligible for funding. For emission calculation purposes, use the emission factors for 2007 MY and later vehicles shown in Appendix B, Table B-5.

(3) The replacement vehicle must operate in the same vocation for the project life. The participant must stay in the contracted vocation for a minimum of 85 percent of the miles, as specified in the application. If a change of vocation is required to stay in operation, a written explanation must be provided to the district and approved by the ARB.

(4) The annual mileage of the replacement vehicle must not exceed 150 percent of the baseline project mileage, except as approved by the district.

(5) Engine Horsepower Requirements: The horsepower rating for the replacement vehicle engine must not be greater than 120 percent of the original manufacturer rated horsepower (baseline horsepower) for the old vehicle engine. This is necessary because engine horsepower is related to the emissions produced by heavy-duty diesel engines. Auditing of the replacement vehicle's horsepower may occur throughout the length of the agreement.

(6) Participants must use the horsepower rating listed on the old engine tag. If the engine tag is not legible, a dynamometer test can be used to determine the horsepower rating. The results of a dynamometer test will take into account a 15 percent loss in actual horsepower, based on transmission loss. The participant must pay the cost of dynamometer testing.

(7) In the event the replacement engine horsepower is more than 20 percent greater than the old vehicle, it must be de-rated (reduced) to not exceed the 20 percent allowable increase. The 20 percent allowable increase in horsepower is calculated as follows:

(Old Engine Horsepower) x (1.20) = Maximum New Engine Horsepower
(Example: 300 HP x 1.20 = 360 HP)

(8) In limited situations, the district may approve a greater than 20 percent increase in horsepower.

(9) Weight Class: Eligible vehicles must have a California heavy-heavy gross vehicle weight rating of 33,000 pounds. Vehicles having a California medium heavy-duty weight rating of 19,501-33,000 pounds may be eligible upon the

request of the district on a case-by-case basis. The replacement vehicle must be in the same weight rating as the old vehicle.

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

(11) Warranty Requirements: 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 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 agreement period.

(12) Electronic Monitoring Unit (EMU): The EMU electronically reports vehicle miles traveled and the number of miles a vehicle has operated within the California and district boundaries. Except for school buses, an EMU is required on all replacement vehicles.

(13) The full purchase of the EMU (including warranty, data retrieval, compilation, and transmission to the district, and the installation cost) is eligible for Carl Moyer Program funding.

(14) If an affordable and suitable EMU is not available at the time the replacement vehicle is ready for delivery, the vehicle may be delivered to the applicant. The owner will be required to return the vehicle to the dealer when an EMU is available for installation. Verification of the installation must be submitted to the district following installation.

(15) EMU data must be reported to the district for the project life.

(16) If the EMU is not functioning properly as indicted by the district, the participant will submit mileage reports as specified the district.

(17) Upon approval of the ARB, the district may waive the requirement for installation of an EMU.

(18) 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 or the EMU are not allowed.

(e) District Administrative Requirements

Districts must establish fleet modernization policies and guidelines before they can fund fleet modernization projects. The fleet modernization policies and guidelines are required whether a district is administering a fleet modernization program independently or in conjunction with other districts in a regional program. Many administrative tools are needed to manage a reliable fleet modernization source category. This includes MOU with local dealership and salvage yards, reimbursement procedures, pre- and post-inspections, monitoring and enforcement considerations, and the development of contracts, etc. The ARB must approve a district's, or a regional program's, fleet modernization policies and guidelines prior to the district(s) implementing a fleet modernization program. The ARB will provide examples for district's use, if requested. The district's fleet modernization guidelines must address all of the above criteria as well as the items discussed in the following sections.

(f) Determining Awards

Grant award determinations must be made with the following considerations:

(1) Funding awards are based on the average miles per year driven during the previous two years. Fleet averages cannot be used. Participants must submit conclusive documentation of mileage including logbooks, fuel records, and maintenance records maintained for individual vehicles.

(2) The incentive amount available for the purchase of the vehicle will be based upon three criteria: cost-effectiveness of the project based upon the weighted NOx + ROG + combustion PM10 emission benefits as calculated by the district; the value of the used vehicle based upon the National Automotive Dealership Association (N.A.D.A.) or new vehicle invoice price and, less any costs associated with repairs noted during the vehicle inspection.

(3) The emission benefits of the project are calculated based on the difference in emission factors of the replacement, new vehicle (new emission factors) and the old, baseline vehicle (baseline emission factors). The baseline emission factors are based on the model year of the old vehicle.

(4) The maximum reimbursement for all awards, except school bus projects, will be the lesser of either: (a) 80 percent of the used truck value or the invoiced price of a new truck for fleets of five or less, or, for fleets of six or more, 50 percent of the used truck value or 50 percent of the invoice cost of a new truck, or (b) the maximum calculated incentive. The value of a used, replacement truck shall be determined using the N.A.D.A. commercial vehicle guide.

(5) The maximum reimbursement for school bus awards will be the lesser of either: (a) 100 percent of the used school bus value or 100 percent of the invoiced price

of a new school bus, or (b) the maximum calculated incentive. The value of a used, replacement school bus shall be determined using the N.A.D.A. commercial vehicle guide.

(6) District is allowed to make full payment to the dealer at the time the dealer delivers the new vehicle to the applicant under the following framework: (a) District must complete the pre-inspection of the old vehicle and new vehicle to make sure that those vehicles comply with program requirements; (b) District must sign separate MOU with the dealer and the salvage yard that contains, at a minimum, the program requirements (including, but not limited to, the requirement that the dealer delivers the old vehicle to a qualified salvage yard within 30 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; (c) District must ensure the vehicle is scrapped within 60 days of the salvage yard's receipt of the vehicle through post-inspection with the salvage yard to properly document the destruction of the old vehicle in accordance with the Carl Moyer fleet modernization program requirements; and (d) Failure on the district's part to follow up with such post-inspection would constitute a finding in future ARB's audit of the district's Carl Moyer program

(7) Incentive funding can only be used to pay for items essential to the operation of the vehicle. Optional items, such as cigar lighters and custom mud flaps, must be paid for at the owner's expense.

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

(g) Subtracting the Cost of Repairs

Fleet modernization projects are required to subtract the cost of repairs needed for the old vehicle from the incremental cost of the new vehicles. The cost of repairs is subtracted because it is assumed that repair costs are a normal business expense that would have been incurred by the participant had the vehicle stayed in service. The repair costs are identified during the inspection verifying the operating condition of the old vehicle.

(h) Dealer Requirements

Districts are encouraged to establish contracts with dealers that are selling replacement vehicles to fleet modernization participants. Dealers could provide participants with needed assistance in the application process. Vehicle dealers are encouraged to help in the application process as much as possible. If districts use vehicle dealers in implementing the fleet modernization category, reimbursement cannot be issued until all forms are submitted and approved by the district.

Participants may purchase the replacement vehicles from a private party, provided all required documentation is submitted. This includes warranty requirements and all other fleet modernization requirements.

(1) Vehicle dealers are expected to do the following:

(A) Provide basic information about the fleet modernization category. Districts will provide liaison training to dealership staff.

(B) Inform participants of rights and responsibilities as outlined in the district and ARB guidelines.

(C) Help the participants complete the application. The vehicle 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 district will provide all forms and certificates as appendices to the application. Once complete, the dealer will submit the application package to the district.

(2) To ensure that an application package is complete, the dealer will make sure that all the following items are complete and included in the participant's submission to the district. The following must be completed before reimbursement can be made:

(A) Submit a signed and complete application.

(B) Provide documentation showing that the old vehicle is roadworthy. This includes documentation showing that the old vehicle has passed a CHP BIT inspection old vehicle in the past 90 days or conduct an equivalent vehicle inspection and sign as appropriate. The district reserves the right to audit the dealer's record of inspection.

(C) Provide invoices of all work performed on the replacement vehicle. The invoices must include all engine, transmission, body and other work performed on the replacement vehicle. Invoices must include the installation of all equipment required by this program: EMU (at the discretion of the district), and engine horsepower de-rated, if necessary.

(D) Submit digital photographs of the old vehicle and the replacement vehicle to the district. The district will specify the required digital format. Reimbursement will not be processed until all photographs are received and verified by the district. Before submitting photographs to the district, dealers must verify that photographs are clear. 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 - left side.
f. Engine - right side.
g. Engine Serial Number - either tag or stamp on block.
h. License plate.
i. Rear.

2. Photographs of the replacement 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.
e. VIN Tag - on frame rail.
f. Engine - left side.
g. Engine - right side.
h. Engine Serial Number and Engine Information – tag.
i. License plate.
j. Rear.
k. Electronic Monitoring Unit (in working condition).
l. Diesel Emission Control Device (if available).
m. Odometer Reading.
n. Additional modifications (if applicable).

(E) Provide certification that the old vehicle will be delivered to a qualified salvage yard. The certification must state that the vehicle will be picked up by the salvage yard within 30 days of receipt of the old truck. The contract must include the make, model, year, VIN, engine make, engine serial number, and the date the vehicle is expected to be delivered.

(F) Provide documentation of replacement vehicle warranty and registration.

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

(H) Prior to releasing the replacement vehicle to the participant, the dealer must have documentation of a district pre-inspection of the old vehicle and the replacement vehicle. Upon request of the district, ARB may waive inspection requirements.

(I) After the application and all required documentation have been approved by the district, the dealer must provide the district with proof of sale of the replacement vehicle.

Although dealers may assist applicants with the application process, third party applications are not allowed. The owner of the engine must sign and agree to the application. A third party (e.g., engine dealer or distributor) may complete an application or part of an application on an owner's behalf. Applications must include a signature section for third parties. The third party signature section must include signature and date lines, and blanks for the third party to list how much they are being paid, if anything, to complete the application and what source of funds are being used to pay them. To make the Carl Moyer Program accessible to all potential applicants, including applicants that cannot afford to hire third party assistance, districts are encouraged to provide technical assistance to applicants in completing the application.

(i) Compliance Checks

After the district qualifies fleet modernization projects for funding, but before the district APCO signs an agreement for funding a project, the district must submit the project to ARB to check for outstanding violations. The process for completing the compliance check is as follows:

(1) The district shall email its ARB district liaison the registered owner's name, vehicle identification number, California Highway Patrol number, Department of Transportation number or Interstate Commerce Commission number for each engine to be repowered or retrofitted in the project. Due to the large number of vehicles that could require compliance checks, districts are encouraged to submit this data as soon as possible after receipt of the application.

(2) The liaison will forward that information electronically to the responsible parties at ARB. The liaison will email the district the results of the compliance check within seven working days.

(3) If the compliance check indicates there is an outstanding violation the district shall inform the engine owner in writing that no disbursement may be made until the owner provides proof that the violation has been corrected and the fines have been paid.

(4) If the outstanding violation is based on problems with the baseline engine (e.g., gross polluter) a new engine must be installed (instead of fixing the old engine), the vehicle must be operational, the engine owner must pay the violation and submit documentation of the violation being corrected with, or before submitting, the invoice.

(j) Salvage Requirements

Fleet modernization requires that the old truck be scrapped. Destruction of the old vehicle chassis and engine permanently removes the old, high emitting vehicles from service. This requirement has 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. Vehicle salvage yards are required to enter into an agreement with the district to qualify for participation. Qualified vehicle salvage yards are required to be licensed by the Department of Motor Vehicles (DMV) as an auto-dismantler; have a current, valid California Environmental Protection Agency (Cal/EPA) Hazardous Materials Generators Permit; and be in compliance with all local, state and federal laws and regulations.

To ensure that the vehicle will not be used again, the criteria specify that a qualified salvage yard destroy the engine as specified in Part III: Program Administration, and cut the frame rails of the old vehicle. The old vehicle must be driven to a qualified vehicle salvage yard for destruction.

Funding is not available for the salvage of any old vehicle. The vehicle salvage value will be negotiated between the participant, the dealership and the salvage yard. The salvage yard operator must do the following:

(1) Dismantle the old vehicle within 60 days of receipt. The destruction must be done in accordance with program guidelines.

(2) The old vehicle's engine must be destroyed and rendered useless as specified in Part III: Program Administration.

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

(4) Take photographs of the destroyed engine as specified in Part III: Program Administration, and the cut frame rails. Photographs of the destroyed engine block and cut frame rails must be provided to the district within ten business days of salvaging the vehicle. The following picture views must be taken:

- (A) Front of vehicle with hood down.
- (B) Right side of vehicle with hood down.
- (C) Left side of vehicle with hood down.
- (D) Serial number printed either on the tag inside in the cab or on the frame rail.
- (E) Engine side view.
- (F) Engine serial number either stamped on the block or on the tag.
- (G) Destroyed engine block either in-frame or out of frame as specified in Part III: Program Administration.
- (H) Cut frame rails.

(5) File a “Non-Repairable Vehicle Certificate” with the DMV using an “Application for Salvage Certification or Non-Repairable Vehicle Certification”.

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

(7) Upon request of the district, ARB may approve an extension to the required timeframe for vehicle destruction.

(k) Pre-Inspection

To protect the integrity of the fleet modernization source category, districts must conduct a pre-inspection of the old vehicle and of the replacement vehicle. Districts are encouraged to design rigorous inspection procedures. At a minimum, the inspection of the old vehicle must be conducted to establish that it has been in service, that it meets the described weight class and configuration, and that costs associated with needed repairs have been identified and deducted from the incentive award. The cost of repairs needed for the old vehicle will be subtracted from the incremental cost of the grant award.

Inspection of the replacement vehicle must be conducted to verify that the vehicle meets the contract description, including class and configuration descriptions, EMU installation, and any other items deemed necessary to confirm the authenticity project. Upon the request of the district, the ARB may approve an alternative method of ascertaining the authenticity of the old and replacement vehicle.

(l) Minimum Reporting Requirements

Fleet modernization reporting requirements have been established to verify that project participants meet contract requirements and to quantify the emission reductions achieved through the Carl Moyer Program. Fleet modernization projects are subject to the following minimum reporting requirements:

(1) If the participant has a California Motor Carrier Permit, a current copy must be submitted to the district annually. If the participant does not have a California Motor Carrier Permit, the participant must provide registration and proof of insurance to the district annually.

(2) The participant must provide annual reports for the life of the project. The report on the replacement truck will include information such as the number of hours of operation, miles driven in the 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 district.

(3) Participants from targeted vocation categories must provide documentation of vocation on an annual basis.

(4) If the replacement vehicle is involved in an accident, the participant must report the accident to district staff within 14 days. The participant will be required to provide a police report of the accident, a letter from the insurance company regarding the accident and any additional information requested by the district. The participant is required to repair the vehicle and return it to operation, if possible. Down time due to an accident will be credited toward the performance requirements as along 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 district staff must come to an agreement regarding any requirements that still need to be met.

(m) Recovery of Incentive Funds

The district must establish a mechanism to assure the participant fulfills all contractual obligations. This includes owning and operating the replacement vehicle for the project life, and staying in the agreed upon vocation for the duration of the contract. Participants must meet an 80 percent minimum baseline mileage requirement for the life of the project and agree to repay a pro-rated portion of the incentive funding for failure to fulfill the minimum performance requirements. Upon request of the district, ARB may approve an alternate minimum baseline requirement. The district will determine the method of notice and achieving fund recovery. Options may include:

(1) List the 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 district, within 30 days of the purchase of the replacement vehicle. The financing statement must have the district as the secured party and the vehicle should be listed as collateral.

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

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

For the purposes of the Carl Moyer Program, fleet modernization project definitions are as follows:

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.

Heavy-duty vehicles (HDV): Defined in the following chart:

Vehicle Classification	GVWR
Medium Heavy-Duty (MHD)	14,001 < 33,000 lbs
Heavy Heavy-Duty (HHD)	33,001 or more lbs

Open Vocation Category: Vehicles in any fleet size that are not as defined in the targeted vocations category, as defined in this document.

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.

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.

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.

Targeted Vocation Category: Vehicles operating in agricultural, construction, mining, forestry vocations, and public fleet vehicles in low-population areas as defined in the public fleet regulation adopted by the ARB in December 2005.

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.

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.

VII. References

ARB, 2002a. Air Resources Board. December 12, 2002. California Exhaust Emission Standards and Test Procedures for 1985 through 2003 Model Heavy-Duty Diesel Engines and Vehicles. http://www.arb.ca.gov/msprog/onroadhd/85-03hddtps_levhdg02_clean_11-14.doc

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ARB, 2005. Air Resources Board. January 7, 2005. Staff Report: Proposed Modifications to the Fleet Rule for the Transit Agencies and New Requirements for Transit Fleet Vehicles. http://www.arb.ca.gov/regact/bus04/isor.pdf

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ARB 2006b. California Emissions Inventory Model, EMFAC2007, V2.3 Nov 1, 2006.

Gateway Cities Council of Governments. November 2004, Gateway Cities Clean Air Pilot Program: Truck Fleet Modernization Program Guidelines.

Sacramento Metropolitan Air Quality Management District. May 2005. Fleet Modernization Impacts on Normal Vehicle Turnover - Issue Paper.

The Sacramento Emergency Clean Air Transportation (SECAT) Program, Policies and Guidelines.

Chapter 5: 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 does not cover stationary and portable agricultural equipment. Criteria and requirements for the off-road equipment replacement category can be found in Chapter 7. Local air districts may set more stringent requirements based upon local priorities. Definitions of off-road CI terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

ARB has adopted two fleet rules affecting off-road CI equipment: the In-Use Off-Road Diesel Vehicle Regulation (Off-Road Regulation) and Cargo Handling Equipment at Ports and Intermodal Rail Yards Regulation (CHE Regulation). There are limited funding opportunities for equipment subject to these rules. The first step in evaluating Moyer eligibility is determining whether equipment is subject to one of the ARB rules:

Table 5-1
Summary of Off-Road CI Engine Funding Opportunities

Equipment Type	Subject to ARB Fleet Rule?	Moyer Funding Opportunities*
Mobile agricultural equipment	No	Engine repowers and retrofits.
Cargo handling equipment at ports/ intermodal rail yards	CHE Regulation	Limited opportunities.
All other equipment (e.g. construction, mining, rental, airport ground support and other industries)	Off-Road Regulation	Small fleets: Tier 1 and cleaner repowers; retrofits through 2/29/12 – limited opportunities for retrofits after this date. Medium fleets: Tier 2 or cleaner repowers and retrofits through 2/28/10. Limited opportunities after this date. Large fleets: Limited opportunities for Tier 2 or cleaner repowers and retrofits.

**Limited opportunities* means a fleet's compliance status with the ARB regulation must be determined. Contact district Moyer Program staff or consult fleet rule Moyer implementation charts at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm in addition to these guidelines.*

Project Types: Taking the above table into consideration, the following categories are eligible projects:

- **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 7.
- **Engine Repowers.**

- **ARB-Verified Retrofits.**
- **New Purchases-** case-by-case approval.

Please see Section IV (Project Criteria) for detailed minimum eligibility requirements for all off-road CI project categories.

II. Maximum Eligible Funding Amounts

The Carl Moyer Program pays only the incremental cost of clean air projects. The maximum percent of off-road compression-ignition costs eligible for Carl Moyer Program funding are:

- Tier 1 Repower – 75 percent
- Tier 2 Repower – 80 percent
- Tier 3, Interim Tier 4, and Tier 4 Repowers – 85 percent
- Retrofit Device – 100 percent

Projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Projects must also meet all other relevant criteria in Section IV of this chapter.

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program off-road compression-ignition projects must therefore be surplus to the following regulations to be eligible for funding:

In-Use Regulations

- ARB In-Use Off-Road Diesel Vehicle Regulation: ARB's Off-Road Regulation requires vehicles to apply exhaust retrofits and to accelerate turnover of fleets to newer, cleaner engines. This regulation applies to self-propelled diesel-fueled vehicles with engines 25 horsepower and greater that cannot be registered and licensed to drive on-road. These vehicles are commonly used in construction, mining, rental, airport ground support and other industries.

  The Off-Road Regulation establishes annual fleet average emission targets for PM and NOx that decline over time. If in any year that a fleet does not meet the fleet average targets, the fleet must turnover and retrofit a maximum percentage of their total horsepower. The regulation also includes the Surplus Off-Road Opt-in for NOx (SOON) program. Local air districts may opt into the SOON program to reduce NOx emissions earlier than what is required by the regulation. Larger fleets that operate vehicles in districts participating in the SOON program will be required to apply for incentive money, and – if they receive funding – to take additional actions to reduce NOx emissions.

The initial compliance dates are earliest for large fleets, followed by medium fleets, and then small fleets. Table 5-2 lists the initial compliance dates and the regulatory requirements for the different fleet sizes.

Table 5-2
In-Use Off-Road Diesel Vehicle Regulation Initial Compliance Dates and Regulatory Requirements

Fleet Size	Description*	Initial Compliance Date	Regulatory Requirements
Large	> 5000 HP	March 1, 2010	PM and NOx
Medium	>2,500 to 5,000 HP and fleets <2,500 HP that are not small businesses or local municipal fleets	March 1, 2013	PM and NOx
Small	0 to 2,500 HP and are a business, non-profit organization or training center, or local municipal fleet	March 1, 2015	PM

* Complete fleet size definitions may be found in Section VI.

Detailed information regarding ARB's In-Use Off-Road Diesel Vehicle Regulation can be found at: http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm

- ARB's Cargo Handling Equipment at Ports and Intermodal Rail Yards Regulation: This regulation establishes best available control technology (BACT) requirements for new and in-use cargo handling equipment that operate at California's ports and intermodal rail yards. The regulation requires in-use yard trucks to meet BACT performance standards primarily through accelerated turnover of older yard trucks to those equipped with 2007 model year and later on-road engines. Non-yard truck equipment is also required to meet BACT requirements, which is a menu of options that includes replacement to cleaner on-road or off-road engines and/or the use of retrofits. Cargo handling equipment that does not operate at a port or intermodal rail yard is not subject to this regulation but may be subject to the Off-Road Regulation.

  Detailed information regarding ARB's Cargo Handling Regulation can be found at: http://www.arb.ca.gov/msprog/offroad/cargo/cargo.htm.

Emission Standards

- Off-Road Compression Engine Regulations: The ARB and U.S. EPA have adopted regulations for exhaust emission standards for new off-road engines and equipment. These engine exhaust emission standards may be found in Table 5-3. The project criteria in Section IV detail the availability of funding for engines manufactured under these provisions.

Table 5-3
ARB and U.S. EPA Exhaust Emission Standards for New Off-Road Diesel Engines ≥ 25 hp (g/bhp-hr)

Maximum Rated Power (hp)	Tier	Model Year	NOx	HC	NOx+NMHC	CO	PM
25=<50	Tier 1	1999-2003[a]	—	—	7.1	4.1	0.60
	Tier 2	2004-2007	—	—	5.6	4.1	0.45
	Tier 4 Interim	2008-2012	—	—	5.6	4.1	0.22
	Tier 4	2013 and later	—	—	3.5	4.1	0.02
50=<75	Tier 1	1998-2003[a]	6.9	—	—	—	—
	Tier 2	2004-2007	—	—	5.6	3.7	0.30
	Tier 3[b]	2008-2011	—	—	3.5	3.7	0.30
	Tier 4 Interim	2008-2012	—	—	3.5	3.7	0.22
	Tier 4	2013 and later	—	—	3.5	3.7	0.02
75=<100	Tier 1	1998-2003[a]	6.9	—	—	—	—
	Tier 2	2004-2007	—	—	5.6	3.7	0.30
	Tier 3	2008-2011	—	—	3.5	3.7	0.30
	Tier 4 Interim[c]	2012-2014	2.5	0.14	—	3.7	0.015
	Tier 4	2015 and later	0.3	0.14	—	3.7	0.015
100=<175	Tier 1	1997-2002[a]	6.9	—	—	—	—
	Tier 2	2003-2006	—	—	4.9	3.7	0.22
	Tier 3	2007-2011	—	—	3.0	2.6	0.22
	Tier 4 Interim[c]	2012-2014	2.5	0.14	—	3.7	0.015
	Tier 4	2015 and later	0.3	0.14	—	3.7	0.015
175=<300	Tier 1	1996-2002	6.9	1.0	—	8.5	0.40
	Tier 2	2003-2005	—	—	4.9	2.6	0.15
	Tier 3[d]	2006-2010	—	—	3.0	2.6	0.15
	Tier 4 Interim[c]	2011-2013	1.5	0.14	—	2.6	0.015
	Tier 4	2013 and later	0.3	0.14	—	2.2	0.015
300=<600	Tier 1	1996-2000	6.9	1.0	—	8.5	0.40
	Tier 2	2001-2005	—	—	4.8	2.6	0.15
	Tier 3[d]	2006-2010	—	—	3.0	2.6	0.15
	Tier 4 Interim[c]	2011-2013	1.5	0.14	—	2.6	0.015
	Tier 4	2013 and later	0.3	0.14	—	2.2	0.015
600=<750	Tier 1	1996-2001	6.9	1.0	—	8.5	0.40
	Tier 2	2002-2005	—	—	4.8	2.6	0.15
	Tier 3[d]	2006-2010	—	—	3.0	2.6	0.15
	Tier 4 Interim[c]	2011-2013	1.5	0.14	—	2.6	0.015
	Tier 4	2013 and later	0.3	0.14	—	2.2	0.015
≥750	Tier 1	2000-2005	6.9	1.0	—	8.5	0.4
	Tier 2	2006-2010	—	—	4.8	2.6	0.15
	Tier 4 Interim	2011-2014	2.6	0.30	—	2.6	0.07
	Tier 4	2015 and later	2.6	0.14	—	2.6	0.03

[a] EPA model years, ARB model year for Tier 1 starts at 2000 for 25=<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] The implementation schedule shown is the three-year alternate NOx approach. Other schedules are available.

[D] Caterpillar, Cummins, Detroit Diesel Corporation, and Volvo Truck Corporation have agreed to comply with these standards by 2005.

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program off-road compression-ignition projects. Such projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) General Off-Road CI Equipment Project Criteria

(1) Maximum project life:

(A)	Repower Only (no retrofit)	7 years
(B)	Repower + retrofit	5 years
(C)	Retrofit	5 years

A longer project life may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(2) Funding is available for propulsion engines greater than 25 horsepower on mobile off-road equipment. Auxiliary engines on mobile equipment and portable engines are not eligible for funding.

(3) Emission reduction technologies must be certified/verified by the ARB and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

(4) Cost-effectiveness calculations must use the hour based formula as discussed Appendix C. Historical hours of operation must be based on the average of the two previous years use. 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.

(5) 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.

(6) Engines participating in the averaging, banking, and trading (ABT) 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.

(7) The certification emission standard and Tier designation for the engine must be determined from the ARB Executive Order issued for that engine. Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php

(8) Engines that are participating in the "Tier 4 Early Introduction Incentive for Engine Manufacturers" program, as detailed in Title 13, CCR, section 2423(b)(6), are ineligible for Carl Moyer Program funding. The ARB executive order for these engines reference that the engines are certified under this citation.

(9) For equipment with baseline engines manufactured under the flexibility provision, as detailed in Title 13, CCR, 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. Districts must retain this documentation in the project file. The ARB executive order for these engines reference that the engines are certified under this citation.

(10) The only forklifts eligible for funding under this chapter are class 7 diesel forklifts. The district must obtain and verify documentation of the classification of the forklift prior to funding.

(11) All case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements as described in Part III, Section 28.

(b) 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. Although these are commonly diesel-to-diesel repowers, significant NOx and PM benefits are achieved due to the high emission levels of the uncontrolled engine being replaced.

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

(2) Repowers that are not performed by the OEM, must follow the process set out in the 2005 Carl Moyer Program Guidelines Appendix G.

(3) The maximum percent of repower costs eligible for Carl Moyer Program funding are:
(A) Tier 1 Repower – 75 percent
(B) Tier 2 Repower – 80 percent
(C) Tier 3, Interim Tier 4, and Tier 4 Repower – 85 percent

(4) For repower projects, the replacement engine must be certified to a NOx emission standard that is at least 15 percent lower than the emission standard(s) applicable to the existing engine and be certified to either the current applicable

emission standard, except as noted below, or to a FEL NOx or NOx+NMHC level that is lower than the required emission standard.

(5) Equipment manufactured under the “Flexibility Provisions for Equipment Manufacturers”, as detailed in Title 13, CCR, section 2423(d), are ineligible for Carl Moyer Program funding as a replacement engine.

(6) The replacement engine used in vehicle repower projects may be a new, rebuilt, or a remanufactured engine. Rebuilt and remanufactured engines that are not re-certified to new emission standards shall use the emission standards associated with the original engine block. An ARB Executive Order with the certified emission standard is required to determine the appropriate emission standard. If the engine family matching the Executive Order is not listed on the engine’s data plate, then other means of verifying that the engine is certified may be used (e.g., verify engine serial number or model with manufacturer) and documented in the project file.

(7) If repowering with an engine meeting the current applicable standard is technically infeasible, unsafe, or cost prohibitive to develop at the time of obligation of funds, the replacement engine must meet the most current practicable previously applicable emission standard. The district shall determine eligibility of a repower project using an engine certified to a previous emission standard by one of the two following methods:

(A) 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, safety risks, or exorbitant cost. 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 Tier 1/Tier 2 replacement engine. Districts must retain the written statement of reasons in the project files.

(B) The engine manufacturer has provide ARB with sufficient information on engine and/or equipment models for which Tier 2/Tier 3 repowers are available, and engine and/or equipment models for which Tier 2/Tier 3 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 district staff.

(8) Notwithstanding Section IV(b)(7), repower to Tier 1 is ineligible for funding with the following exceptions:

(A) In a fleet meeting the small fleet definition of the Off-Road Regulation.
(B) In a fleet defined as a captive attainment area fleets in the Off-Road Regulation.

(C) Equipment specifically exempted from the performance requirements of the Off-Road Regulation section 2449(d).
(D) Equipment that is not subject to the Off-Road Regulation.

(9) If an ARB-verified retrofit is available for the replacement engine, ARB requires installation of the retrofit verified to the highest level, as discussed in Section IV(c) of this chapter.
(A) If the additional cost of the retrofit causes the cost-effectiveness to be above the cost-effectiveness limit as defined in Chapter 2(h), then the retrofit is not required.
(B) If documentation can be provided to the district or ARB that the retrofit is not technically feasible, available, or safe, then the retrofit is not required. Documentation for a retrofit that impairs the safe operation of a vehicle must follow the process set out in section 2449(e)(8) of the Off-Road Regulation.

(10) ARB is providing limited flexibility for one year after Board approval of these Guidelines that allows the applicant to opt-out of the default retrofit requirement.
(A) This flexibility will expire one year after Board approval of these Guidelines unless the flexibility is reevaluated by the ARB Executive Officer.
(B) Projects utilizing this flexibility must have fully executed contracts prior to expiration of this flexibility.
(C) Applicants must sign a waiver acknowledging that due to existing or future regulations they may be required to install a retrofit on the funded equipment at their own cost.
(D) Districts must provide information regarding existing or future regulations to applicants upon request. The availability of this information must be made known to applicants upon signing of the waiver.
(E) Districts that rank projects based on cost-effectiveness must evaluate repower plus retrofit projects solely on the repower portion of the project for ranking and selecting purposes. When calculating cost-effectiveness for this purpose, if the applicant requested the maximum project life for repower plus retrofit (i.e., five years) then a seven year project life should be used, unless shortened by other regulatory requirements. If the applicant requested anything below five years, then cost-effectiveness shall be based on the requested project life.
(F) If two projects, one with repower plus retrofit and one with repower only, have the same cost-effectiveness when ranked and the district only has enough funds to pay for one project, then the district must select the repower plus retrofit project.
(G) Districts have the option to not offer this additional flexibility and are encouraged to evaluate individual projects based on the near source health impacts.

(11) All engines replaced as part of an off-road repower project must be destroyed and rendered useless, consistent with the requirements of Part III, Section 31(c).

(c) Retrofit

Retrofit is the installation of a 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. Equipment that has been issued an exemption from retrofit installation from specific manufacturers may be found at http://www.arb.ca.gov/msprog/moyer/retrofit/exemptions.htm.

(1) 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.

(2) 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.

(3) 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.

(4) The maximum percent of retrofit costs eligible for Carl Moyer Program funding are: 100 percent.

(d) 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 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) In-Use Off-Road Diesel Vehicle Regulation

(1) Projects are subject to the general program criteria listed above.

(2) 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.

(3) Large Fleets
The first compliance date for large fleets is March 1, 2010 so very limited funding opportunities exist. Since fleets must be in compliance with the regulations three years early in order to receive funding, a high initial investment will be required by fleets to take advantage of Carl Moyer Program funding. Additionally, to ensure that projects are surplus to regulatory requirements fleets are only eligible to receive funding once after July 26, 2007. Large fleets may have additional requirements, see Section IV(e)(7).

(4) Medium Fleets

The first compliance date for medium fleets is March 1, 2013 so some opportunities for funding exist. Medium fleets can apply for Carl Moyer Program funding for projects that will be installed and in operation by February 28, 2010. For projects that will be installed and in operation after March 1, 2010, funding opportunities are limited in a manner similar to large fleets. To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once after March 1, 2010.

(5) Small Fleets

The first compliance date for small fleets is March 1, 2015 so greater opportunities for funding exist. Small fleets qualify for incentive funds in two ways:

(A) Compliance with the PM requirement begins on March 1, 2015. Small fleets are eligible for incentive funds to pay for the full cost of retrofits that are installed and in operation by February 28, 2012. After March 1, 2012, funding opportunities are limited.

(B) Small fleets have no NOx requirements in the regulation and are therefore not required to turnover their equipment. As such, funding for NOx and ROG reductions will always be eligible for incentive funds. Fleet owners can apply for Carl Moyer Program funds to repower their equipment and will be eligible for grants based only on NOx and ROG reductions. Since the Carl Moyer Program requires retrofit on all repower projects if verified and available, up until February 28, 2012 both the repower and the retrofit are eligible for funding. After February 28, 2012, the retrofit will still be required but must be paid for by the fleet owner.

(6) Captive attainment area fleets are only subject to the PM requirements of the regulation regardless of fleet size and are therefore only required to retrofit their equipment. As such, funding for NOx and ROG reductions will always be eligible for incentive funds. This means that fleet owners can apply for Carl Moyer Program funds to repower their equipment and are eligible for grants based only on NOx and ROG reductions. The retrofit would still be required but must be paid for by the fleet owner. Funding opportunities for PM reductions would be limited based on the size of the fleet as discussed previously.

(7) Certain fleets operating in Districts that are participating in the SOON program may be required to apply for incentive funds to achieve the 2014 and 2017 fleet average targets early. Participating fleets will be required to submit compliance plans for the Off-Road Regulation to ensure projects are surplus to regulatory requirements. Fleets receiving SOON funds may be eligible to receive funds more than once. Fleets should contact their local air district to determine if this program is available.

(8) For more information on eligibility of off-road diesel equipment, please see the In-Use Off-Road Diesel Vehicle Regulation Carl Moyer Program Implementation Chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(f) Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards

Much of the cargo handling equipment must already be in compliance with the CHE regulation. Thus, the high initial investment that will be required by fleets to participate, and the lack of current technology that is cleaner than what is required by the regulation makes it unlikely that fleets will be able to take advantage of Carl Moyer Program funds. Funding may be available for retrofits in certain circumstances.

(1) Projects are subject to the general program criteria listed above.

(2) 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.

(3) 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 through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

For the purposes of the Carl Moyer Program, off-road compression-ignition project definitions are as follows:

BACT: Best Available Control Technology.

Captive Attainment Area Fleet: a fleet or an identified subpart of the fleet (fleet portion, consistent with section 2449(d) of the California Code of Regulations) 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.

Class 7 Forklift: Rough terrain forklift trucks (pneumatic tires).

Fleet Size for Vehicles Subject to the Off-Road Regulation:

Large Fleet: 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.
Medium Fleet: A fleet that is not a small or large fleet.
Small Fleet: 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.

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.

Off-Road Compression-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 compression-ignition, or diesel, engine standards. This equipment is most commonly used in construction, mining, agriculture, and cargo handling equipment. This does not include stationary agricultural pumps, marine vessels, or locomotives.

Tier 1, 2, and 3 Engines: Engines that are subject to title 13, CCR, section 2423(b)(1)(A) and/or Title 40, CFR, Part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 1, 2, and 3 Family Emission Limits (FEL) listed in title 13, CCR, section 2423(b)(2)(A) and/or Title 40, CFR, Part 89.112(d).

Tier 4 Engine: Engines that are subject to the interim or final after-treatment based Tier 4 emission standards in title 13, CCR, section 2423(b)(1)(B) and/or Title 40, CFR, Part 1039.101. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in title 13, CCR, section 2423(b)(2)(B) and/or Title 40, CFR, Part 1039.101.

VII. References

ARB, 2000. Final Regulation Order: Amendments to Off-road Compression-ignition Engine Regulations: 2000 and Later Emissions Standards, Compliance Requirements and Test Procedures. http://www.arb.ca.gov/regact/ciengine/ciengine.htm

ARB, 2005. Final Regulation Order: Amendments to the California Off-road Emissions Regulations for Compression-ignition Engines and Equipment.
http://www.arb.ca.gov/regact/offrdcie/offrdcie.htm

ARB, 2006. Final Regulation Order: Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards.
http://www.arb.ca.gov/regact/cargo2005/cargo2005.htm

ARB, 2007. Staff Report: Initial Statement of Reasons (ISOR) for the Regulation of In-Use Off-Road Diesel Vehicles.
http://www.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm

Chapter 6: 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 7. Local air districts may set more stringent requirements based upon local priorities. Definitions of off-road LSI terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

ARB has adopted in-use LSI Engine Fleet Requirements (LSI Fleet Rule). There are limited funding opportunities for equipment subject to this rule. The first step in evaluating Moyer eligibility is determining whether equipment is subject to the rule:

Table 6-1
Summary of Off-Road LSI Equipment Funding Opportunities

Equipment Type	Subject to ARB Fleet Rule?	Moyer Funding Opportunities*
Forklifts, sweeper/ scrubbers, industrial tow tractors, airport ground support equipment (GSE)	LSI Fleet Rule	Small fleets: Not limited by regulation. Large/Medium fleets: Funding opportunities are limited.
Agricultural crop preparation services (forklifts only)	LSI Fleet Rule	Pre-1990 MY forklifts: Not limited by regulation. 1990 and later MY forklifts: Funding opportunities are limited.
All other equipment (e.g. aerial lifts, construction, mining, other industrial)	No	Not limited by regulation.

**Limited funding opportunities* means a fleet's compliance status with the ARB regulation must be determined. Contact district Moyer Program staff or consult fleet rule Moyer implementation charts at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm in addition to these guidelines.*

Project Types: Taking the above table into consideration, the following categories are eligible projects:

- **Equipment Replacement.** Purchases of new or used LSI equipment replacing an uncontrolled, fully functional LSI piece of equipment may be eligible. For these projects, refer to Chapter 7.
- **ARB-Verified Retrofits.**
- **New Electric Purchase.**
- **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 IV (Project Criteria) for detailed minimum eligibility requirements for all off-road LSI project categories.

II. Maximum Eligible Funding Amounts

The Carl Moyer Program pays only the incremental cost of clean air projects. The percent of LSI project costs eligible for Carl Moyer Program funding are:

- Retrofit Device – 100 percent
- New Purchase – 30 percent for new electric equipment

Projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Projects must also meet all other relevant criteria in Section IV of this chapter.

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program LSI projects must therefore be surplus to the following in order to be eligible for funding:

In-Use Regulations

- California Fleet Requirements: The 2006 regulation established levels of fleet average HC + NOx emission requirements which will become more stringent over time. This was intended to encourage accelerated turnover to cleaner LSI equipment in fleets of four or more. The compliance dates shown in Table 6-2 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 6-2
Fleet Average Emission Level Requirement
(g/bhp-hr HC + NOx)

Fleet Type	Compliance Dates		
	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

Detailed information regarding California's LSI regulatory activities can be found on the following website: www.arb.ca.gov/msprog/offroad/orspark/orspark.htm.

Emission Standards

- California Emission Standards: ARB first adopted standards of 3 g/bhp-hr for LSI engines in 1998 which impacted 2001 and later model year engines. ARB revisited the LSI emission standard in 2006, establishing a 2.0 g/bhp-hr HC + NOx standard for 2007 - 2009 model year engines, and a 0.6 g/bhp-hr HC + NOx standard for 2010 and later model year engines. At that time, ARB also adopted optional low emission standards and a retrofit verification procedure.

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program Large Spark Ignition projects. Such projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional regulations in order to address local concerns. See applicable criteria for LSI fleet requirements in E below.

(a) General Off-Road LSI Equipment Project Criteria

(1) Maximum project life:

(A)	New electric purchase	10 years
(B)	Retrofit	5 years

A longer project life may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(2) Funding is available for propulsion engines of LSI equipment greater than 25 horsepower or electric equipment that is greater than 19 kilowatts (kW). Auxiliary engines on mobile equipment and portable engines are not eligible for funding.

(3) 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.

(4) Emission reduction technologies must be certified/verified by the ARB and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

(5) Future annual hours of equipment operation for determining emission reductions must be based only on readings from an installed and fully operational hour-meter.

(6) The following industries are not eligible for funding under this chapter: food retail stores, cold storage, and confined space operations (such as freezers).

(7) The certification emission standard must be determined from the Executive Order issued for that LSI engine family, not by the engine model year. Executive Orders for off-road engines may be found at: http://www.arb.ca.gov/msprog/offroad/cert/cert.php?eng_id=LSIE

(8) 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.

(9) Case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements as described in Part III, Section 28.

(b) 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. ARB has verified retrofit systems that reduce HC and NOx emissions of LSI engines. The reductions are stated as absolute emissions. Information on LSI verified retrofit systems, may be found at: http://www.arb.ca.gov/msprog/offroad/orspark/verdev.htm

(1) Forklifts in Classes 4, 5, and 6 are eligible for retrofit project funding. All other LSI equipment for which there are verified retrofit systems would be eligible for funding.

(2) The retrofit kit must be verified by ARB to the highest level available for the engine being retrofitted.

(3) Eligible costs include purchase and installation of a verified retrofit kit and an hour meter if none exists on the equipment.

(4) The maximum percent of retrofit costs eligible for Carl Moyer Program funding are: 100 percent.

(c) New Purchase

Electric Equipment

Electric equipment does not have exhaust emissions; therefore it provides greater emission reduction benefits compared to equipment with internal combustion engines. Past Carl Moyer Program funding was generally used for electric forklift purchases, now other electric equipment will be included.

(1) Eligible new electric forklift purchases would be in Class 1, lift codes 4, 5, or 6.

(2) For eligible projects, applicants must sign a declaration that old electric equipment is not being replaced with new electric equipment and the applicant wouldn't normally purchase electric equipment.

(3) 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.

(4) Costs for battery chargers and necessary peripheral equipment associated with electric equipment projects may be included in determination of the grant award amount. These costs are considered infrastructure and can only be paid for with district match funds.

(5) The maximum percent of electric equipment new purchase costs eligible for Carl Moyer Program funding are: 30 percent.

(6) Purchase of new zero-emission equipment other than electric is eligible on a case-by-case basis only with prior ARB approval (i.e. fuel cell equipment).

LSI Equipment

Current LSI regulations allow manufacturers to certify engines to optional standards that are below the required emission standards. There are new LSI engines certified to an optional standard as low as 0.6 g/bhp-hr available for use in a variety of types of equipment. It is likely, due to market demand driven by current regulations, that the price deferential 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% below the current applicable emission standard may be eligible on a case-by-case basis only with prior ARB approval.

(d) 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 relative low value of the equipment by the time an engine repower is needed. Repowers of forklifts and other LSI equipment would be considered on a case-by-case basis only with prior ARB approval.

(e) Off-Road Large Spark-Ignition Fleet Requirement

The regulation 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.

(1) Projects are subject to the general program criteria listed above.

(2) 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.

(3) Large and Medium Forklift Fleets and Fleets of 4 or More Sweeper/Scrubbers, Ground Support Equipment, and/or Industrial Tow Tractors: Regulatory compliance dates for these fleets are January 1, 2009, January 1, 2011, and January 1, 2013. Only fleets that have met the 2011 fleet average can apply for Carl Moyer funding for projects that will be installed and in operation three years prior to the January 1, 2013, compliance deadline (i.e, January 1, 2010). To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once prior to meeting the final compliance deadline.

(4) Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer: These fleets are required to either retrofit or repower 20% of their fleet, or meet a 3.0 g/bhp-hr fleet average HC + NOx level, by January 1, 2009. If complying using the retrofit/repower path, the rest of the fleet must be retrofit or repowered by January 1, 2012. Fleets that have met the 3.0 g/bhp-hr fleet average can apply for funding. Additionally, fleets that have met the 2009 regulatory requirements can apply for Carl Moyer funding for projects that will be installed and in operation three years prior to the January 1, 2012, compliance deadline (i.e., January 1, 2009).

(5) Fleets with equipment not subject to the off-road LSI in-use fleet regulations are eligible for funding.

(A) Agricultural crop preparation non-forklift equipment and pre-1990 forklifts
(B) Non-forklift LSI equipment such as aerial lifts, lawn & garden tractors, commercial turf equipment, mining and construction equipment, industrial equipment
(C) Small fleets (1-3 forklifts and/or 1-3 sweepers/scrubbers, industrial tow tractors or pieces of airport ground support equipment)

(6) For more detailed information on potential funding opportunities, see Carl Moyer Program Implementation chart for the LSI Fleet Requirement available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

For the purposes of the Carl Moyer Program, Large Spark Ignition project and criteria definitions are as follows:

Agricultural Crop Preparation Services: Packinghouses, cotton gins, nut hullers and processors, dehydrators, feed and grain mills, and other related activities. For full definition, see CCR, Title 13, Section 2775.

Airport Ground Support Equipment:
"Airport Ground Support Equipment" means 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.

Emission Control System: Any device or system employed with off-road LSI-engines or piece of equipment that is intended to reduce emissions. Examples of LSI emission control systems include, but are not limited to, closed-loop fuel control systems, three-way catalysts, fuel injection systems and combinations of the above.

Fleet Average Emission Level: The arithmetic mean of the combined hydrocarbon plus oxides of nitrogen emissions for each piece of applicable equipment comprising an operator's fleet. For full definition, see CCR, 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 this website: http://www.indtrk.org.

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: An operator's aggregated operations in California of 26 or more pieces of LSI equipment.

Medium Fleet: An operator's aggregated operations in California of 4 to 25 pieces of LSI equipment.

Non-forklift fleet: An operator's aggregated operations in California of four (4) or more sweeper/scrubbers, industrial tow tractors, or pieces of airport ground support equipment, alone or in combination.

Off-Road Large Spark Ignition Engine (LSI): Means any spark ignition engine that produces a gross horsepower of 25 horsepower or greater (greater than 19 kW for 2005 and later model year) or is designed to produce 25 horsepower or greater (greater than 19 kW 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.

Retrofit: Means an emission control system employed exclusively with an in-use off-road LSI-engine, vehicle or piece of equipment.

Sweeper/scrubber: An LSI 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.

Small Fleet: An operator's aggregated operations in California of 1 to 3 LSI forklifts and/or 1 to 3 pieces of non-forklift LSI equipment.

Uncontrolled LSI Engines: Means pre-2001 uncertified engines and 2001-2003 certified "non-compliant' LSI engines.

Verification: Means a determination by the Executive Officer that the LSI emission control system meets the requirements of an ARB approved Procedure.

VII. References

ARB, 2006. Final Regulation Order: New Emission Standards, Fleet Requirements and Test Procedures for Forklifts and other Industrial Equipment http://www.arb.ca.gov/regact/lore2006/lore2006.htm

U.S.EPA, 2002. "Control of Emission from Nonroad Large Spark-Ignition Engines, and Recreational Engines (Marine and Land Based) http://www.epa.gov/otaq

South Coast Air Quality Management District, November 27, 2002. South Coast Ground Support Equipment Memorandum of Understanding http://www.arb.ca.gov/msprog/offroad/gse/gse-mou-final.pdf

Chapter 7: OFF-ROAD EQUIPMENT REPLACEMENT

The off-road equipment replacement program is intended to obtain emission reductions by replacing old, high polluting equipment with newer, cleaner equipment. This source category can provide real emission benefits by retiring the high polluting equipment earlier than would have been expected through normal attrition. In this source category, Carl Moyer Program funds are used to offset part of the cost of the replacement vehicle as well as diesel retrofits.

The Carl Moyer Program approaches equipment replacement cautiously for two reasons: 1) equipment replacement occurs on its own without incentive funding, and 2) paying for more than just the engine may not result in the best value for state funds. However, for some equipment, replacing the engine only, (i.e., repowering) is not possible and for others, the diminished value of the old equipment may not justify investing significant funds for engine replacement. In the 2005 Carl Moyer Program Guidelines, ARB created the on-road fleet-modernization source category that provides incentive funds to replace old vehicles that were unlikely to be removed from operation with newer cleaner vehicles. Using the on-road fleet modernization program as a starting point, ARB has created a program that will provide a similar option for off-road equipment. ARB's intent in designing this program was to ensure that it does not pay for equipment replacement that would have occurred anyway, but would be accessible for accelerated turnover of old equipment.

In developing the project criteria for this program, there were areas where the available data for off-road equipment was much less robust than for on-road vehicles. One such area was the determination of project lives. For equipment subject to ARB's In-Use Off-Road Diesel Vehicle Regulation, extensive surveys were completed to update the existing off-road CI inventory which included median useful life for several categories of equipment. Since CI agricultural equipment was not part of that regulation, ARB's inventory has not been updated and staff felt it was necessary to extend project life for CI agricultural equipment based on trends that occurred for other off-road CI equipment. Assessments to the inventory for agricultural equipment will be continually monitored to determine if changes to the project criteria are appropriate.

This chapter describes the minimum criteria and requirements for Carl Moyer Program mobile, self-propelled off-road equipment replacement projects. Local air quality management districts may set more stringent requirements based upon local priorities. Definition of terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

Projects in this category may only be considered in Districts that have an ARB approved Equipment Replacement Plan.

Eligible projects are those in which a new or used piece of equipment with an engine meeting the current Model Year California emission standard replaces an uncontrolled, fully functional off-road compression-ignition or large spark ignition piece of equipment that is to be scrapped.

Please see Section IV of this chapter for detailed minimum eligibility requirements for off-road compression-ignition (CI) and large spark ignited (LSI) equipment replacement. Equipment covered under this source category may be subject to more stringent requirements as described in Section III.

II. Maximum Eligible Funding Amounts

Projects are eligible for reimbursement up to a maximum of 80 percent of total equipment purchase costs or the eligible cost of repower (as defined in Chapter 5 Section IV(b)(3) for CI equipment) with an engine meeting the current Model Year California emission standard, whichever is less. Retrofits for CI equipment are eligible for up to 100 percent of total costs, including all filters and maintenance of the filters needed during the project life.

Projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Projects must also meet all other relevant criteria in Section IV of this chapter.

III. Background

Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program off-road equipment replacement projects must therefore be surplus to the following regulations to be eligible for funding:

- Compression-ignition:
  Off-Road Compression Ignition Engine Regulations
  ARB In-Use Off-Road Diesel Vehicle Regulation
  ARB's Cargo Handling Equipment at Ports and Intermodal Rail Yards

- Large spark ignited:
  Large Spark Ignited Engine Regulations
  ARB's Large Spark Ignited Fleet Requirements (LSI Fleet Rule)

A description of these regulations can be found in Chapter 5 and Chapter 6 for CI and LSI equipment, respectively.

Legislative Background

Senate Bill 467 (Lowenthal) requires the ARB to establish grant criteria in the Carl Moyer Program guidelines for the replacement of off-road internal combustion equipment with zero-emission equipment that can perform the same work. The bill requires that equipment being replaced must be owned by the applicant, still have some remaining life, and be scrapped. In addition, the bill specifically requires ARB to address three main issues: project life, emission reduction benefits, and incremental cost. Criteria were developed for the replacement of LSI forklifts with zero emission

technology because this equipment represents the majority of equipment that could take advantage of the provisions of this bill; however these criteria may be modified on a case-by-case basis for additional equipment types.

- SB 467 requires that ARB adjust project life so that it is extended to incorporate the remaining life of the equipment being scrapped (3 years) and the median useful life of the equipment the applicant would have bought at the time of normal attrition (7 years) (see Section IV(a)(2)).
- Emission benefits from two separate transactions must be included in the cost effectiveness calculations:
    - Emission reductions from existing uncontrolled equipment to zero emission.
    - Emission reductions from a new piece of equipment meeting the emission standards at time of purchase to zero emission. For the purposes of this program, ARB has interpreted this to mean new equipment that would have been purchased through normal attrition.

  Further discussion on the calculation of emission benefits and cost-effectiveness may be found in the sample calculations in Appendix E.
- ARB may include salvage value and any additional costs incurred for recharging or infrastructure in the incremental cost. The salvage value of an uncontrolled LSI forklift is likely to be very little or of no appreciable value. ARB does not believe that the addition of salvage value to the incremental cost achieves any additional benefit to the Carl Moyer Program or the applicant and therefore will not be including salvage value as part of the incremental cost. ARB has determined that the cost of the electric charging station and corresponding installation may be an eligible cost as defined in Section IV(a)(2) if this chapter.

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program off-road equipment replacement projects. Off-road equipment replacement projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) General Criteria

(1) Projects are eligible for a maximum of 80 percent of total equipment purchase costs or the eligible cost of repower (as defined in Chapter V, section IV(b)(3)) with an engine meeting the current Model Year California emission standard, whichever is less up to the weighted cost-effectiveness limit. If a repower with an engine meeting the current Model Year California emission standard is not available, a maximum of 80 percent of the total equipment purchase costs is eligible for funding up to the weighted cost-effectiveness limit.

(2) Replacement with an electric forklift is 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 Chapter 2(h).

(3) Project Life

(A) The maximum project life for all off-road CI equipment replacement projects is five years with the following exceptions:

1. Three years: excavators, skid steer loaders, and rough terrain forklifts as defined in Section VI of this chapter.
2. Seven years: crawler tractors, off-highway tractors, rubber tired dozers, and workover rigs as defined in Section VI of this chapter.

(B) The maximum project life for all off-road LSI equipment replacement projects is three years.

(C) The maximum project life for replacement of an LSI forklift with a zero emission forklift is ten years.

(D) 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.

(4) Funding is available for equipment utilizing the following engines:

(A) Large spark ignited engines larger than or equal to 19kW (25 horsepower). Engines above 25 horsepower but with a displacement of less than or equal to one liter may be eligible for funding on a case-by-case basis.

(B) Diesel engines larger than or equal to 25 horsepower.

(5) Emission reduction technologies must be certified/verified by the ARB and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

(6) Equipment must be maintained in accordance with manufacturer specifications.

(7) All case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements as described in Part III, Section 28.

(8) 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.

(b) Existing (Old) Equipment Requirements

Equipment from any vocation is eligible for funding provided the participant submits conclusive documentation as detailed below.

(1) The old equipment must have an uncontrolled engine.

(2) To prove residency in California, 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:
   (A) Bill of sale for the old equipment and
   (B) Two years of documentation for at least one item in the following list. If a bill of sale cannot be provided, two items from the following list may be submitted in substitution:
      1. Tax depreciation logs
      2. Property tax records
      3. Equipment insurance records
      4. Bank appraisals for equipment
      5. Maintenance/service records
      6. General ledgers
      7. Fuel records specific to the old equipment (To be used as evidence of California residency the fuel records must also identify the equipment owner.)
      8. Other documentation approved by ARB.

(3) The old equipment must be in operational condition to qualify for funding. The participant must be able to provide documentation for the previous year for at least one of the following:
   (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 (OSHA or workplace required)
   (D) Other documentation approved by ARB.

   In addition, the district must conduct a pre-inspection of the old equipment prior to funding to verify the operational status of the equipment.

(4) Participants must submit documentation of annual usage of the old equipment for the previous two years. Usage from this documentation will be used to calculate the cost-effectiveness of the project. The participant must be able to provide at least one of the following types of documentation:
   (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 district approval
6. Other documentation approved by ARB.

(5) 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 and replacement equipment must comply with all of the appropriate criteria. The replacement equipment must execute the same job as the old pieces of equipment. For baseline cost-effectiveness calculation, the annual emissions of the two pieces of old equipment are summed. For the replacement equipment cost-effectiveness calculation, the usage of the two pieces of old equipment is summed for the replacement equipment usage.

(c) Replacement Equipment Requirements

All replacement equipment must meet the following conditions:

(1) The new or used replacement equipment must have an engine meeting the most recent Model Year California emission standard. If a specific piece of equipment cannot be purchased with an engine meeting the most recent Model Year emission standard at the time districts obligate funds, then equipment with an engine meeting the previous Model Year emission standard may be purchased. Documentation from the equipment manufacturer that equipment with an engine meeting the current Model Year emission standard is unavailable must be provided to the district.

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

(B) For CI equipment, engines that are participating in the “Tier 4 Early Introduction Incentive for Engine Manufacturers” program, as detailed in Title 13, CCR, section 2423(b)(6), are ineligible for Carl Moyer Program funding. The ARB executive order for these engines reference that the engines are certified under this citation.

(C) The certification emission standard and/or Tier designation for the engine must be determined from the ARB Executive Order issued for that engine.

Executive Orders for off-road engines may be found at
http://www.arb.ca.gov/msprog/offroad/cert/cert.php

(2) The replacement equipment must serve the same function and perform the same work equivalent as the old equipment (i.e. replacement of an agricultural tractor with another agricultural tractor). This requirement may be waived by districts with approval from ARB for instances where general purpose farming equipment changes commodities.

(3) Only the minimum attachments normally sold with the original equipment, as determined by the district, are eligible for reimbursement on the replacement equipment.

(4) The horsepower rating for the replacement equipment engine must not be greater than 125 percent of the original manufacturer rated horsepower (baseline horsepower) for the old equipment engine. In limited situations, such as equipment in the original horsepower range was not available or the higher horsepower equipment will result in equal or less annual emissions, the district may approve a greater than 25 percent increase in horsepower. Documentation must be provided that the replacement equipment will be executing the same job as the old equipment.

(5) Purchasers of new CI equipment must purchase a minimum of a three-year or 5000 hours power and drive train warranty for the replacement equipment. Purchasers of new LSI equipment must purchase a minimum of a one-year or 2000 hours power and drive train warranty for the replacement equipment. The warranty must cover parts and labor. Purchasers of used, late model year equipment must purchase the remaining manufacturer warranty, if available, on the equipment. Warranty documentation must be provided to the district. Warranty costs are not eligible for funding. The district may waive this requirement if they have provided ARB a satisfactory plan to ensure that funded equipment will be maintained and operated as if under warranty.

(6) 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.

(7) The participant may obtain financing to assist in the purchase of replacement equipment. Documentation of financing must be provided to the district.

(8) 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 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. Future annual fuel usage for determining emission reductions 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.

(9) For CI equipment, an ARB Verified Diesel Emission Control System (or retrofit) is required on all replacement equipment if available.

(A) If the additional cost of the retrofit causes the cost-effectiveness to be above the cost-effectiveness limit as defined in Chapter 2(h), then the retrofit is not required.

(B) If documentation can be provided to the district or ARB that a retrofit is not technically feasible, available, or safe, then the retrofit is not required. Documentation for a retrofit that impairs the safe operation of a vehicle must follow the process set out in section 2449(e)(8) of the Off-Road Regulation.

(C) Retrofit projects that control PM must use the highest level ARB-verified technology available at obligation of funds for the equipment being retrofitted.

(D) 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.

(E) 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.

(F) Additional information on retrofit systems is included in Appendix F - Retrofit Emission Control Systems and on ARB's website at http://www.arb.ca.gov/diesel/verdev/vt/vt.htm.

(10) ARB is providing limited flexibility for one year after Board approval of these Guidelines that allows the applicant to opt-out of the default retrofit requirement.

(A) This flexibility will expire one year after Board approval of these Guidelines unless the flexibility is reevaluated by the ARB Executive Officer.

(B) Projects utilizing this flexibility must have fully executed contracts prior to expiration of this flexibility.

(C) Applicants must sign a waiver acknowledging that due to existing or future regulations they may be required to install a retrofit on the funded equipment at their own cost.

(D) Districts must provide information regarding existing or future regulations to applicants upon request. The availability of this information must be made known to applicants upon signing of the waiver.

(E) Districts that rank projects based on cost-effectiveness must evaluate equipment replacement projects solely on the equipment replacement portion of the project for ranking and selecting purposes.

(F) If two projects, one with a retrofit and one without a retrofit, have the same cost-effectiveness when ranked and the district only has enough funds to pay for one project, then the district must select the project that includes a retrofit.

(G) Districts have the option to not offer this additional flexibility and are encouraged to evaluate individual projects based on the near source health impacts.

(11) For replacement with electric equipment, projects must provide evidence of a plan to either install battery chargers for each piece of equipment funded or install fast charging units for use with multiple pieces of equipment.

(12) 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 district match funds.

(13) Replacement with zero-emission equipment other than electric must receive case-by-case approval by ARB (i.e. fuel cell equipment).

(d) Existing Equipment Destruction Requirements

Equipment replacement requires that the existing equipment be scrapped. Destruction of the existing equipment chassis and engine permanently removes the existing, high emitting equipment from service. This requirement has been established to ensure 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 a district approved salvage yard or another facility in conjunction with a district salvage inspection. Equipment salvage yards are required to enter into an agreement with the district to qualify for participation.

Funding is not available for the salvage of any existing equipment. The existing equipment salvage value will be negotiated between the participant, the dealership and the salvage yard.

(1) 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 Part III, Section 31 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 district. Documentation of the equipment's destruction must be provided to the district within ten days of destruction.

(2) Districts must conduct a salvage inspection of the old equipment. Districts may use a district approved salvage yard in lieu of this requirement.

(3) If districts use a district approved salvage yard, these additional conditions must be met:
(A) Destroy the old equipment and engine within 60 days of receipt of the replacement equipment in accordance with the program guidelines.

(B) Provide the district with all photographs required under the district's salvage inspections requirements within ten business days of salvaging the existing equipment.

(C) 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.

(D) It is the 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 district's plan.

(4) Upon request of the district, ARB may approve an alternative disposition for the existing equipment.

(5) Upon request of the district, ARB may approve an extension to the required timeframe for existing equipment destruction.

(e) District Administrative Requirements

Districts must establish an off-road equipment replacement plan before they can fund off-road equipment replacement projects. This includes agreements with local dealerships and salvage yards, pre- and post-inspections, monitoring and enforcement considerations, reimbursement procedures, the development of contracts, etc. The ARB must approve the district off-road equipment replacement plan prior to district implementation of an off-road equipment replacement category. Districts may work with dealers to streamline the program. Any potential partnerships between districts and dealers must be identified in the off-road equipment replacement plan. The plan must identify the district's process for oversight and review of dealer identified tasks. The district's off-road equipment replacement plan must address all of the above criteria as well as the following:

(1) Calculation of funding amounts must be based on the average of two most recent years of documented equipment usage. Fleet averages cannot be used.

(2) Incentive funding can only be used to pay for items essential to the operation of the equipment.

(3) Dealer must provide the district with proof of sale of the replacement equipment. Dealers for the purpose of this program are anyone who sells equipment including private parties.

(4) Post-inspection of the replacement equipment and salvage inspection of the old equipment must be completed prior to disbursement of funds.

(5) 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: (a) District must complete the pre-inspection of the old equipment

and post-inspection of the replacement equipment to make sure that those equipment comply with program requirements; (b) District must sign separate MOU with the dealer and the salvage yard that contains, at a minimum, the program requirements (including, but 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 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; (c) 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; and (d) Failure on the district's part to follow up with such salvage inspection would constitute a finding in future ARB's audit of the district's Carl Moyer Program.

(6) Districts are responsible for completing a pre-inspection on the old equipment, a post-inspection on the replacement equipment, and a salvage inspection on the old equipment if equipment destruction is not conducted by a district approved salvage yard. Pre-inspections may be done by a district approved dealer.

(A) Pre-inspection must verify the operational condition of the old equipment. The pre-inspection must verify, at a minimum, the following items:

1. Tires in usable condition (able to hold air, sufficient tread or tracks, etc.)
2. Steering wheel operational
3. Equipment able to start up and move backwards and forwards
4. Buckets, blades, rollers, etc. are working
5. Undercarriage structurally sound
6. Fuel tank in usable condition
7. No parts stripped
8. Equipment not vandalized.

(B) 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 - left side.
6. Engine - right side.
7. Engine Serial Number - either tag or stamp on block.
8. Equipment ID, if available.
9. Rear.

(C) The post-inspection must include clear photographs of the following views:

1. Right Side - hood down.
2. Front - hood down.
3. Left Side - hood down.
4. Equipment serial number

5. Engine - left side.
6. Engine - right side.
7. Engine Serial Number and Engine Information – tag.
8. Equipment ID, if available
9. Rear.
10. Diesel Emission Control Device (if available).
11. Hour meter reading.

(D) Salvage inspection must include clear photographs of the destroyed engine block and cut frame rails. In addition, the following picture views must be taken:

1. Equipment serial number
2. Engine side view.
3. Engine serial number either stamped on the block or on the tag.
4. Destroyed engine block either in-frame or out of frame as specified in Part III: Program Administration.
5. Cut structural components
6. Destroyed attachments, if scrapped
7. Other views dependent on the method of equipment destruction

Small air districts are allowed to fund equipment replacement projects through a regional program and administered by a designated air district. The designated air district could be either an air district within the regional program or a large district outside of the regional program. A regional equipment replacement implementation plan that contains all the required components as required in an individual district's equipment replacement implementation plan, in addition to detailed description of the funding mechanism among the participating districts, must be submitted by the designated administering air district to the ARB for approval. All 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.

(f) Dealer Requirements

Districts are encouraged to establish contracts with dealers that are selling replacement equipment to participants of this program. If districts use equipment dealers in implementing the equipment replacement program, reimbursement cannot be issued until all forms are submitted and approved by the district.

Equipment dealers are expected to do the following:

(1) Provide basic information about the equipment replacement category. Districts will provide liaison training to dealership staff.

(2) Inform participants of rights and responsibilities as outlined in the 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 district will provide all forms and certificates as appendices to the application. Once complete, the dealer will submit the application package to the district.

To ensure that an application package is complete, the dealer will make sure that all the following items are complete and included in the participant's submission to the district. The following must be completed before reimbursement can be made:

(4) Submit a signed and complete application.

(5) Provide all documentation as required in Section IV(b) of these criteria.

(6) 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 contract must include the make, model, year, equipment serial number, engine make, engine serial number, and the date the equipment is expected to be delivered.

(7) If equipment destruction will take place at a site other than an approved salvage yard, the application must include a description and timeline on how the equipment will be destroyed.

(8) Provide documentation of replacement equipment warranty.

(9) Provide proof of replacement equipment financing. The financing package will enable the district to determine the reimbursement costs that may be accrued in case the participant defaults on the contracted performance requirements.

Prior to releasing the replacement equipment to the participant, the dealer must have documentation of a district pre-inspection of the old vehicle and the post-inspection of the replacement equipment. Upon request of the district, ARB may waive inspection requirements. If the dealer is 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 district as defined in the pre- and post-inspection requirements in Section IV(e) of these criteria. The district will specify the required digital format. Reimbursement will not be processed until all photographs are received and verified by the district. Before submitting photographs to the district, dealers must verify that photographs are clear.

After the application and all required documentation have been approved by the district, the dealer must provide the district with proof of sale of the replacement equipment.

(g) In-Use Off-Road Diesel Vehicle Regulation

(1) Projects are subject to the general program criteria listed above.

(2) 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.

(3) Large Fleets
The first compliance date for large fleets is March 1, 2010 so very limited funding opportunities exist. Since fleets must be in compliance with the regulations three years early in order to receive funding, a high initial investment will be required by fleets to take advantage of Carl Moyer Program funding. Additionally, to ensure that projects are surplus to regulatory requirements fleets are only eligible to receive funding once after July 26, 2007. Large fleets may additional requirements, see Section IV(g)(7).

(4) Medium Fleets
The first compliance date for medium fleets is March 1, 2013 so some opportunities for funding exist. Medium fleets can apply for Carl Moyer Program funding for projects that will be installed and in operation by February 28, 2010. For projects that will be installed and in operation after March 1, 2010, funding opportunities are limited in a manner similar to large fleets. To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once after March 1, 2010.

(5) Small Fleets
The first compliance date for small fleets is March 1, 2015 so greater opportunities for funding exist. Small fleets qualify for incentive funds in two ways:

(A) Compliance with the PM requirement begins on March 1, 2015. Small fleets are eligible for incentive funds to pay for the full cost of retrofits that are installed and in operation by February 28, 2012. After March 1, 2012, funding opportunities are limited.

(B) Small fleets have no NOx requirements in the regulation and are therefore not required to turnover their equipment. As such, funding for NOx and ROG reductions will always be eligible for incentive funds. Fleet owners can apply for Carl Moyer Program funds to repower their equipment and will be eligible for grants based only on NOx and ROG reductions. Since the Carl Moyer Program requires retrofit on all repower projects if verified and available, up until February 28, 2012 both the repower and the retrofit are eligible for funding. After February 28, 2012, the retrofit will still be required but must be paid for by the fleet owner.

(6) Captive attainment area fleets are only subject to the PM requirements of the regulation regardless of fleet size and are therefore only required to retrofit their

equipment. As such, funding for NOx and ROG reductions will always be eligible for incentive funds. This means that fleet owners can apply for Carl Moyer Program funds to repower their equipment and are eligible for grants based only on NOx and ROG reductions. The retrofit would still be required but must be paid for by the fleet owner. Funding opportunities for PM reductions would be limited based on the size of the fleet as discussed previously.

(7) Certain fleets operating in Districts that are participating in the SOON program may be required to apply for incentive funds to achieve the 2014 and 2017 fleet average targets early. Participating fleets will be required to submit compliance plans for the Off-Road Regulation to ensure projects are surplus to regulatory requirements. Fleets receiving SOON funds may be eligible to receive funds more than once. Fleets should contact their local air district to determine if this program is available.

(8) For more information on eligibility of off-road diesel equipment, please see the In-Use Off-Road Diesel Vehicle Regulation Carl Moyer Program Implementation Chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(h) Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards

Much of the cargo handling equipment must already be in compliance with the CHE regulation. Thus, the high initial investment that will be required by fleets to participate, and the lack of current technology that is cleaner than what is required by the regulation, makes it unlikely that fleets will be able to take advantage of Carl Moyer Program funds. Funding may be available for retrofits in certain circumstances.

(1) Projects are subject to the general program criteria listed above.

(2) 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.

(3) 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 through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(i) Off-Road Large Spark-Ignition Equipment Regulation

The regulation requires reductions in fleetwide 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, airport ground support equipment, and/or industrial tow tractors.

(1) Projects are subject to the general program criteria listed above.

(2) 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.

(3) Large and Medium Forklift Fleets and Fleets of 4 or More Sweeper/Scrubbers, Ground Support Equipment, and/or Industrial Tow Tractors:
The first regulatory compliance date for these fleets is January 1, 2009 with subsequent compliance deadlines on January 1, 2011, and January 1, 2013. Only fleets that have met the 2011 fleet average can apply for Carl Moyer funding for projects that will be installed and in operation three years prior to the January 1, 2013, compliance deadline (i.e, January 1, 2010).

(4) Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer:
These fleets are required to either retrofit or repower 20% of their fleet, or meet a 3.0 g/bhp-hr fleet average HC + NOx level, by January 1, 2009. If complying using the retrofit/repower path, the rest of the fleet must be retrofit or repowered by January 1, 2012. Fleets that have met the 3.0 g/bhp-hr fleet average can apply for funding. Additionally, fleets that have met the 2009 regulatory requirements can apply for Carl Moyer funding for projects that will be installed and in operation three years prior to the January 1, 2012, compliance deadline (i.e., January 1, 2009).

(5) Fleets with equipment not subject to the off-road LSI in-use fleet regulations are eligible for funding.
   (A) Agricultural crop preparation non-forklift equipment and pre-1990 forklift
   (B) Non-forklift LSI equipment such as aerial lifts, lawn & garden tractors, commercial turf equipment, mining and construction equipment, crushing and processing equipment.
   (C) Small fleets (1-3 forklifts and/or 1-3 sweepers/scrubbers, airport ground support equipment, and/or industrial tow tractors).

(6) Parties interested in applying for funding for this equipment should contact the Carl Moyer Program staff at the local air district for more detailed information. For more detailed information on potential funding opportunities, see the LSI Equipment Regulation Carl Moyer Program Implementation chart available through your local district or at
http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

For the purposes of the Carl Moyer Program, off-road compression-ignition project definitions are as follows:

Agricultural Crop Preparation Services: Packinghouses, cotton gins, nut hullers and processors, dehydrators, feed and grain mills, and other related activities that fall within the United States Census Bureau NAICs (North American Industry Classification System) definition for Industry 115114 – "Postharvest Crop Activities," as published in the North American Industry Classification System − United States, 2002.

BACT: Best Available Control Technology.

Crawler Tractor: a tracked off-road tractor equipped with a substantial metal plate, or blade, as opposed to a bucket on a loaders. 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.

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.

LSI Regulation Fleet Size:

Large Fleet: An operator's aggregated operations in California of 26 or more pieces of LSI equipment.

Medium Fleet: An operator's aggregated operations in California of 4 to 25 pieces of LSI equipment.

Small Fleet: An operator's aggregated operations in California of 1 to 3 LSI forklifts and/or 1 to 3 pieces of non-forklift LSI equipment.
Non-forklift fleet: An operator's aggregated operations in California of four (4) or more sweeper/scrubbers, industrial tow tractors, or pieces of airport ground support equipment, alone or in combination.

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.

Off-highway tractors: equipment that feature yoke hitches that oscillate four ways to reduce frame stresses. Rugged turn stops prevent excessive wagon rotation either direction. The rear platform functions as a power train guard providing a safe, stable work area. [These are **not** off-highway trucks (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 CI 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 compression-ignition, or diesel, engine standards. This equipment is most commonly used in construction, mining, agriculture, and cargo handling equipment. This does not include stationary agricultural pumps, marine vessels, or locomotives.

Off-Road LSI 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 engine 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.

Off-Road CI Regulation Captive Attainment Area Fleet: a fleet or an identified subpart of the fleet (fleet portion, consistent with section 2449(d) of the California Code of Regulations) 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.

Off-Road CI Regulation Fleet Size:

Large Fleet: 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.
Medium Fleet: A fleet that is not a small or large fleet.
Small Fleet: 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.

Skid steer loader: very compact and maneuverable off-road tractors 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 in these machines are alongside the driver with the pivot points behind the driver's shoulders. Skid steers 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 hp, predominantly 40-75 hp). They are often utilized to excavate swimming pools and in landscaping residential backyards.

Rough terrain forklift: Class VII 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 loaders. 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.

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.

VII. References

ARB, 2006. Final Regulation Order: New Emission Standards, Fleet Requirements and Test Procedures for Forklifts and other Industrial Equipment
http://www.arb.ca.gov/regact/lore2006/lore2006.htm

ARB, 2006. Final Regulation Order: Regulation for Mobile Cargo Handling Equipment at Ports and Intermodal Rail Yards.
http://www.arb.ca.gov/regact/cargo2005/cargo2005.htm

ARB, 2007. Staff Report: Initial Statement of Reasons (ISOR) for the Regulation of In-Use Off-Road Diesel Vehicles.
http://www.arb.ca.gov/regact/2007/ordiesl07/ordiesl07.htm

Chapter 8: LOCOMOTIVES

This chapter describes the minimum criteria and requirements for Carl Moyer Program locomotive projects. Local air districts may set more stringent requirements based upon local priorities. Definitions of locomotive terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

Three types of locomotive projects are eligible for Carl Moyer Program funding – an alternative technology switcher (or other cleaner-than-required new locomotive), an idle limiting device (ILD), or a U.S. EPA certified engine remanufacture kit or repower. Carl Moyer Program funding for California's larger "Class 1" freight railroads is generally limited, however, due to the availability of Goods Movement Emission Reduction Bond Program (Prop 1B) funding, and the South Coast and Statewide Memorandums of Understanding (MOU) with these railroads (See Table 8-1).

Table 8-1
Summary of Locomotive Funding Opportunities

Railroad Class	Moyer Funding Opportunities
Class 1 Freight Railroads[1] (Burlington, Northern and Santa Fe Railroad and Union Pacific Railroad)	Projects in California's goods movement trade corridors are generally ineligible for funding due to the availability of for Prop 1B Bond funds.[2] These projects may be eligible for Carl Moyer Program funding on a case-by-case basis if Prop 1B Bond funding is unavailable.
Class 3 Freight Railroads and Passenger Railroads	Class 3 and passenger railroad projects are not limited.

1 - The South Coast MOU further limits funding eligibility for Class 1 freight railroad new purchase or engine remanufacture/repower projects in the South Coast. Class 1 freight railroads are also ineligible for ILD project funding due to the Statewide MOU. See Section IV(A) of this chapter for details.
2 – See Section VI for a definition of California's goods movement trade corridors.

II. Maximum Eligible Funding Amounts

The Carl Moyer Program pays only the incremental cost of clean air projects. Table 8-2 summarizes the maximum percent of total project cost eligible for Carl Moyer Program funding.

Table 8-2:
Maximum Percent Funding for Carl Moyer Program Locomotive Projects

Railroad Class/Type	Alt. Technology Switcher	Idle Limiting Device (ILD)	Repower or Certified Remanufacture Kit
Class 1	50 percent	not eligible	50 percent
Class 3 and Passenger	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)*

Projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Local air districts have the authority to set more stringent

project requirements. Projects must also meet all relevant criteria in Section IV of this chapter.

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, MOU, or other legally binding document. Carl Moyer Program locomotive projects must therefore be surplus to the following to be eligible for funding:

In-use Requirements

- South Coast Locomotive MOU: ARB's MOU with Burlington, Northern and Santa Fe (BNSF) railroad and Union Pacific (UP) railroad require these railroads achieve a 5.5 g/bhp-hr locomotive fleet average NOx emission rate in the South Coast Air basin by 2010. In order to ensure Carl Moyer Program projects are surplus to this MOU, these Class 1 railroads are subject to additional minimum project criteria identified in Section IV.

- Statewide Locomotive MOU: This MOU between ARB and UP and BNSF railroads requires, among other things, that these railroads install ILDs on over 99 percent of their intrastate locomotives by June 2008. Because this agreement requires virtually all UP and BNSF locomotives be installed with ILDs, ILD projects for these railroads are ineligible for funding.

Emission Standards

- Federal Locomotive Remanufacture Emission Standards: Federal locomotive remanufacture emission standards require locomotives originally manufactured in 1973 or later to meet specific emission standards whenever they are rebuilt or remanufactured. In March 2008, U.S. EPA finalized more stringent remanufacture emission standards for locomotives, identified in tables 8-3. These standards tighten NOx remanufacture standards by up to 22 percent and PM standards by 30 to 75 percent. The new federal Tier 0, Tier 1, and Tier 2 standards are designated as Tier 0+, Tier 1+, and Tier 2+ to distinguish them from the "old", less stringent standards. If a locomotive does not already have an ILD, an ILD must be installed when the locomotive engine is remanufactured. Class 1 and Class 2 freight locomotives and intercity passenger and commuter locomotives are subject to these requirements. Class 3 freight railroad locomotives, small passenger locomotives related to tourism, and locomotives manufactured before 1973 are exempt from this element of federal standards.

- Federal Emission Standards for New Locomotives: The second component of federal locomotive standards requires all newly manufactured locomotives meet emission standards. In March 2008, U.S. EPA finalized Tier 3 and 4 new locomotive emission standards, identified in Tables 8-4. Tier 3 standards primarily target switch locomotives, tightening NOx standards by nearly 40 percent and PM standards by two-thirds compared to Tier 2 standards. Tier 4 standards target both line-haul and switch

locomotives. Compared to Tier 2 standards, allowable NOx is reduced by over 75 percent and PM by 85 percent. Tier 3 and 4 standards phase-in beginning in 2011.

Differing project requirements for Class 1 and Class 3 freight railroads reflect both differing regulatory landscapes and differing purchase and operational practices. Additional information regarding these differences can be found in the 2005 Carl Moyer Program Guidelines.

Table 8-3:
Federal Emission Standards for Remanufactured Locomotives
(g/bhp-hr)

Locomotive Type	Implementation Date	HC	NOx	PM
		Tier 0 (1973 – 2001 model years)		
Line-haul/ Passenger	Pre-2008	1.00	9.5	0.60
	2008 as available, 2010 required*	0.55**	7.4**	0.22
Switcher	Pre-2008	2.10	14.0	0.72
	2008 as available, 2010 required*		11.8	0.26
		Tier 1 (2002 – 2004 model years)		
Line-haul/ Passenger	Pre-2008	0.55	7.4	0.45
	2008 as available, 2010 required*			0.22
Switcher	Pre-2008	1.20	11.0	0.54
	2008 as available, 2010 required*			0.26
		Tier 2 (2005+ model years)		
Line-haul/ Passenger	Pre-2008	0.30	5.5	0.20
	2008 as available, 2013 required*			0.10
Switcher	Pre-2008	0.60	8.1	0.24
	2008 as available, 2013 required*			0.13

Federal carbon monoxide (CO) standards not included in table.
** Reflects requirements of 2008 U.S. EPA locomotive remanufacture standards (i.e. Tier 0+, Tier 1+, and Tier 2+).*
***Tier 0 standards for line-haul locomotives without separate loop intake air cooling are 8.0 g/bhp-hr NOx and 1.00 g/bhp-hr HC.*

Table 8-4:
Federal Emission Standards for New Locomotives
(g/bhp-hr)

Locomotive Type	Implementation Date	HC	NOx	PM
		Tier 2		
Line-haul/ Passenger	Existing	0.30	5.5	0.20
Switcher	Existing	0.60	8.1	0.24
		Tier 3		
Line-haul/ Passenger	2012*	0.30	5.5	0.10
Switcher	2011*	0.60	5.0	0.10
		Tier 4		
Line-haul/ Passenger	2015*	0.14	1.3	0.03
Switcher	2015*			

** Reflects requirements of new federal locomotive standards (2008). Tier 0 and Tier 1 new locomotive emission standards may be found in the 2005 Carl Moyer Program Guidelines.*

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program locomotive projects. Locomotive projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) General Locomotive Project Criteria

(1) Class 1 freight locomotive projects in California's goods movement trade corridors, as defined in Section VI (Definitions) of this chapter, are only eligible for Carl Moyer Program funding on a case-by-case basis. Case-by-case project approval shall only be made if Proposition 1B Goods Movement Emission Reduction Program bond funding is unavailable for these projects.

(A) Proposition 1B Goods Movement Emission Reduction bond funding is considered available for locomotive projects in a goods movement corridor each fiscal year from the time a local agency within the corridor is approved bond funding by ARB for locomotive projects until all bond locomotive project funds in that corridor are committed to specific projects via executed contract.

(B) Locomotives that cannot meet bond program eligibility requirements for percent of operation within California as determined during the project case-by-case evaluation are not subject to the requirements of Section (A), above.

(C) A locomotive is considered inside a goods movement corridor if the rail yard where it primarily operates lies within California's Goods Movement Trade Corridors.

(2) Class 1 locomotives subject to the South Coast 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 Table B-18. Locomotives subject to the South Coast MOU which receive Carl Moyer Program funding are ineligible to receive fleet average emission credits.

(3) Military and industrial locomotives railroads are subject to the same Carl Moyer Program criteria as Class 3 railroad locomotives. 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. Section VI of this chapter provides definitions of railroad classes.

(4) Locomotive project activity must be based upon fuel consumption.

(5) Carl Moyer Program funds cannot be use to pay for labor or parts used during routine maintenance, with the exception of required maintenance of a verified retrofit device or certified remanufacture kit.

(6) For all liquefied natural gas-diesel or other dual fuel locomotive projects, an EMU must be used to electronically monitor activity and fuel consumption by fuel type.

(7) All line-haul locomotive new purchase or repower projects must include an electronic monitoring unit (EMU) to track activity and geographic location. Eligible EMUs include a geographic positioning system (GPS) unit, transponding device, automated vehicle locator (AVL), or other similar device. The EMU must be capable of providing complete digital information regarding total activity both within the air district and the State of California; this information shall be reported to air districts annually for the project life. The full purchase, installation, warranty, and data retrieval, summarization or transmittal costs associated with the EMU is eligible for Carl Moyer Program funding, and must be included when calculating project cost-effectiveness.

(8) All locomotive projects receiving more than $50,000 in Carl Moyer Program funds must include purchase and installation of an Automatic Engine Start-Stop (AESS) idle-limiting device to reduce unnecessary engine idling if the locomotive is not already equipped with such a device and AESS installation is technically feasible. Please see Part C of this section for ILD project minimum requirements.

(9) 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. Project eligibility shall

be based upon project life, lease terms, reporting and enforceability provisions, and other project parameters.

(b) Alternative Technology Switcher Purchase

Alternative switcher locomotives funded by the Carl Moyer Program to date include gen-set locomotives (multi-engine switcher) and electric-hybrid locomotives (e.g. green goat). Multi-engine switchers are typically powered by two or three off-road engines, while green goats use a small diesel engine to charge batteries that provide locomotive power. These locomotives typically include an existing locomotive frame significantly refurbished with a new engine or engines, batteries, electronics, controls, and other equipment. The replacement engines have a much lower horsepower rating and emissions than the typical switch locomotive engine. U.S. EPA considers an alternative technology switcher a new locomotive if it includes at least 75 percent (by value) new parts.

(1) An alternative technology switcher must achieve a NOx emission rate of 3.5 g/bhp-hr and a PM emission rate of 0.14 g/bhp-hr. New locomotives with an aggregate engine power rating greater than or equal to 1,006 horsepower (750 kW) must be demonstrated by U.S. EPA to achieve this emission level (or cleaner). The applicable new locomotive emission factors are determined by following the instructions on the Carl Moyer Program supplemental documents webpage at: www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm. 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, these lower horsepower locomotives must be verified 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.

(2) Baseline emissions for an alternative technology switcher 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. The cost of an alternative technology switcher eligible for Carl Moyer Program funding shall not exceed 50 percent of the total cost of the new switcher for Class 1 railroads or intercity passenger and commuter railroads, and 85 percent of the total cost of the new switcher for Class 3 railroads or small passenger railroads related to tourism.

(3) An alternative technology switcher must use the cleanest available certified on-road or off-road engine.

(4) Class 1 alternative technology switcher projects in air districts other than the South Coast must have a minimum project life of ten years. ARB may approve a project life of less than ten years for these locomotives on a case-by-case basis. All other locomotive projects have a minimum project life of three years. Projects with shorter lives may be subject to additional funding restrictions, such as a lower cost-effectiveness limit or a project cost cap.

(5) The maximum project life for a locomotive new purchase project is 20 years. A longer project may receive case-by-case approval if applicants provide justifying documentation.

(6) For alternative technology switcher projects, fuel consumption for the new locomotive may differ from baseline fuel consumption if the new locomotive fuel use is sufficiently documented to ARB and air district staff.

(7) Alternative technology locomotives which are not switch locomotives may be considered for funding on a case-by-case basis.

(c) Idle-Limiting Device

Installation of an automatic engine start-stop (AESS) ILD can significantly reduce emissions from locomotives, which typically spend 40 to 60 percent of their operating time in the idle duty cycle. The AESS provides an automatic, fully integrated mechanism to reduce idling and does not rely upon a locomotive operator or require additional engines or infrastructure. An AESS typically uses a central computer to monitor vital engine parameters, such as battery charge, water temperature, and brake pressure, and automatically shuts off the engine after a set time. This technology is generally applicable to more locomotive types and operating conditions than other ILD devices.

(1) 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 AESS ILD.

(2) AESS emission reductions are calculated by applying the ILD factors in Appendix Table B-18. Appendix E provides details regarding use of the ILD factors.

(3) All ILDs must comply with applicable durability and warranty requirements.

(4) The maximum project life for a locomotive ILD project is ten years. A longer project may receive case-by-case approval if applicants provide justifying documentation.

(5) Benefits of an AESS are reflected by applying the ILD factor to the newer locomotive engine only if: 1) the project locomotive is operated by a Class 3 railroad; 2) the baseline engine does not have a functioning ILD; and 3) a functioning AESS is to be installed on the project locomotive. The ILD factor is never used to calculate the cost-effectiveness of new locomotive purchase projects or for Class 1 locomotive projects (since Class 1 locomotives are required to install an AESS as part of the Statewide Locomotive MOU). The first example locomotive cost-effectiveness calculation in Appendix D utilizes the ILD factor to calculate project cost-effectiveness.

(6) Installation of an ILD is required by U.S. EPA for intercity passenger and commuter locomotives when these locomotives are remanufactured, if the locomotive does not already have a functioning device. Therefore, an ILD is only

eligible for funding on a case-by-case basis if it is not federally required (i.e. not part of an engine remanufacture) and it can be demonstrated that the project locomotive will not be remanufactured for at least three years. The project life for an intercity passenger or commuter locomotive ILD project shall not exceed the number of years until the next engine remanufacture. U.S. EPA considers an engine to have been remanufactured if all of the power assemblies have been replaced within a five year period.

(d) U.S. EPA-Certified Engine Remanufacture Kit or Engine Repower

Engine remanufacture kits typically include new fuel injectors, cylinder head assemblies, pistons, and other engine components. Class 1 freight locomotives and passenger locomotives are required to remanufacture their engines to the tier corresponding to the original engine manufacture date, as identified in Table 8-3. Engine remanufacture kit projects for these railroads must therefore be surplus to this federal requirement. Engine remanufacture kits must be also certified by U.S. EPA and meet all of the following criteria to be eligible for Carl Moyer Program funding. Locomotive engine repowers are also eligible for funding, although very few have been funded to date.

(1) Purchase and installation of the cleanest available tier U.S. EPA-certified remanufacture kit or 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. Baseline emissions reflect the emissions tier level required by federal locomotive remanufacture standards (See Table 8-3 for Class 1 freight railroad and passenger railroad locomotive remanufacture requirements). Pre-1973 locomotives and Class 3 locomotives use the uncontrolled emission rates in Appendix Table B-18, 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 Table B-18.

(2) Projects which include a replacement of between 50 and 75 percent (by value) of an existing locomotive's parts with new parts (including conventional new engine technology) are defined as "locomotive refurbishment" by U.S. EPA. Refurbished locomotives with less than 3000 engine horsepower that are at least 30 percent cleaner than the standard applicable to the baseline locomotive are eligible for Carl Moyer Program funding as a locomotive repower project. These projects must meet all the requirements of locomotive repower projects, including the eligible cost criteria identified in Section IV(d)(7) of this chapter. A refurbished locomotives which is demonstrated by U.S. EPA not to exceed 3.5 g/bhp-hr NOx and 0.14 g/bhp-hr PM, consistent with Section IV(b)(1) of this chapter, shall be considered alternative technology switcher and is subject to alternative technology switcher project criteria.

(3) The U.S. EPA Certificate of Conformity (such as that shown in Appendix Figure F-3) 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. Step-by-step instructions for determining project emission factors emission factors are determined by following the instructions on the Carl Moyer Program supplemental documents webpage at: www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(4) The Carl Moyer Program may pay up to the following percentage of the total cost of a U.S. EPA-certified remanufacture kit or repower:

(A) Class 1 Railroad Locomotive – 50 percent
(B) Class 3 Railroad/Passenger Locomotive: Tier 0+: 75 percent
Tier 1+: 80 percent
Tier 2+: 85 percent

(5) Remanufacture kits must be demonstrated not to increase in-use emissions of NOx, ROG, or PM emissions.

(6) 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 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.

(7) The maximum project life for a locomotive repower 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.

(8) The baseline cost for a Carl Moyer Program remanufacture kit or repower project include only those items the Certificate of Conformity identifies as 1) 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. The eligible baseline cost 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.

(9) Locomotive engine remanufacture and engine repower projects must achieve at least a 30 percent NOx reduction beyond baseline emission levels.

(10) 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) 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 retrofit device must typically be verified by ARB or U.S. EPA to reduce emissions from the project engine to be eligible for funding. While no devices have been verified as of January 1, 2008, ARB is evaluating several retrofit devices for potential verification.

(1) A retrofit device must be ARB- or U.S. EPA-verified to reduce emissions from the project engine in order to be eligible for funding. Non-verified technologies may be considered on a case-by-case basis if: 1) an application for verification of the retrofit or add-on equipment on the proposed engine category is pending, 2) the retrofit or add-on equipment has been verified by ARB and certified by U.S. EPA (if available) for use on a similar engine category, or 3) project emission benefit, durability, and applicability have been demonstrated through in-situ testing.

(2) A retrofit project must achieve at least a 15 percent reduction in NOx emissions if taking credit for NOx reductions.

(3) Up to 100 percent of the total cost of a locomotive retrofit project is eligible for Carl Moyer Program funding.

(4) Retrofits considered for funding on a case-by-case basis must be clearly demonstrated to achieve the expected emission reductions for the full project life, function properly under the project locomotive engine duty cycle, and to not harm the locomotive engine.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project cost-effectiveness and evaluate project eligibility.

VI. Definitions

For the purposes of the Carl Moyer Program, locomotive project definitions are as follows:

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.

Class 1 Freight Railroad: A freight railroad with an annual operating revenue of over $319.3 million as of 2005 is considered a Class 1 freight railroad. As of October 2007, UP, BNSF, and their subsidiaries are the only Class 1 freight railroads operating in California.

Class 2 Freight Railroad: A freight railroad with an annual operating revenue of between $25.5 million and $319.3 million as of 2005 is considered a Class 2 freight railroad. As of October 2007, there are no Class 2 freight railroads based in California.

Class 3 Freight Railroad: Any freight railroad not included as a Class 1 or Class 2 railroad, including but not limited to short-line railroads and military and industrial railroads, is a Class 3 freight railroad.

Idle-Limiting Device: A device used to reduce the locomotive idling, including an AESS, an auxiliary power unit, and a diesel driven heating system.

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.

Passenger Locomotive: A locomotive that hauls passengers as its primary function.

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.

VII. References

ARB, September 19, 2007. Goods Movement Emission Reduction Program -- Staff Draft Concepts for Implementation

Federal Register, April 16, 1998. Federal Register, Part II - Environmental Protection Agency, Emission Standards for Locomotives and Locomotive Engines Final Rule; 40 CFR Parts 85, 89 and 92; April 16, 1998.

U.S. EPA, 2007. Regulatory Announcement: EPA Proposal for More Stringent Emission Standards for Locomotives and Marine Compression-Ignition Engines; EPA420-F-07-015, March 2007.

U.S. EPA, 2008. Final Rule: Control of Emissions from Locomotive Engines and Marine Compression-Ignition Engines Less than 30 Liters per Cylinder; March 14, 2008.

Chapter 9: MARINE VESSELS

This chapter describes the minimum criteria and requirements for Carl Moyer Program marine vessel projects. Local air districts may set more stringent requirements based upon local priorities. Definitions of marine vessel terminology can be found at the end of this chapter.

I. Projects Eligible for Funding

ARB has adopted two regulations that could impact funding opportunities for marine vessel projects -- the Harbor Craft Diesel Engine Regulation (Harbor Craft Regulation) and the Regulation to Reduce Emissions from Diesel Auxiliary Engines on Oceangoing Vessels While At-Berth (Shore Power Regulation). The first step in evaluating Carl Moyer Program eligibility is determining whether a project is subject to one of these rules:

Table 9-1: Summary of Marine Vessel Funding Opportunities

Project Type	Subject to ARB Rule	Moyer Funding Opportunities
Excursion vessel, ferry, tug boat, or tow boat engine repower	Harbor Craft Regulation	Funding opportunities through dates listed in Tables 9-3 and 9-4.
Fishing vessel, pilot/work boat, or crew/supply boat engine repower	No	Not limited by regulation.
Shore power transformer*	Shore Power Regulation	Funding opportunities until 1/1/11.
Shore power – vessel retrofit	No	Not limited by regulation.

** Shore power transformers at cargo vessel berths may be ineligible for Carl Moyer Program funding due to availability of Goods Movement Emission Reduction Bond funds. See Section IV(c) of this chapter for details.*

Please see Section IV (Project Criteria) for detailed minimum eligibility requirements for all marine vessel project categories.

II. Maximum Eligible Funding Amounts

Table 9-2 indicates the maximum percent of total marine vessel repower and shore power project costs eligible for Carl Moyer Program funding.

Table 9-2: Maximum Project Costs Eligible for Carl Moyer Program Funding

Project Type		Maximum Eligible Funding
Tier 2 Repower	Excursion, ferry, tug, or tow boat	50 percent
	Fishing, pilot/work, or crew/supply vessel	80 percent
Tier 3 Repower	All vessel types	85 percent
Shore power transformer		50 percent
Shore power vessel retrofit hardware		100 percent

All projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Local air districts have the authority to set more stringent project requirements. Projects must also meet all other relevant criteria in Section IV of this chapter.

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program marine vessel projects must therefore be surplus to the following to be eligible for funding:

In-use Regulations

- ARB Harbor Craft Regulation: ARB's Harbor Craft Regulation, adopted in November 2007, requires owners and operators of in-use ferries, excursion vessels, tow boats and tug boats take actions to reduce emissions, such as repowering their older engines with newer, cleaner engines. The Carl Moyer Program has a minimum three year project life, meaning that incentive funds may only be used to pay for a project completed at least three years prior to its compliance deadline. Therefore, vessel engines with earlier rule compliance dates will have limited opportunity for funding. Engine repowers on vessels not required to reduce emissions by the rule – including fishing vessels, crew and supply vessels, work vessels, and others – continue to provide surplus emission reductions and remain eligible for Carl Moyer Program funds.

  The Harbor Craft Regulation has differing implementation timelines for vessels with homeport in the South Coast AQMD and those outside of the South Coast AQMD. Table 9-3 in Section IV of this chapter provides compliance dates, based on an engine's model year and hours of operation, for vessels with home port outside the South Coast AQMD. Table 9-4 provides Harbor Craft Regulation compliance and project completion deadlines for vessels with home port in the South Coast AQMD.

- ARB's Shore Power Regulation: ARB's Shore Power Regulation, adopted in December 2007, requires container ships, passenger ships, and refrigerated cargo ships utilize shore power when berthed at the ports of Hueneme, Los Angeles, Long Beach, Oakland, San Diego, and San Francisco. The regulation generally requires fleets with these vessels at these ports use shore power for at least 50 percent of visits at each port by January 1, 2014, and for at least 70 and 80 percent by 2017 and 2020, respectively. The regulation also requires refrigerated cargo ships that make ten or more visits per year to a California port use shore power by January 1, 2014. Terminals are also required to provide the necessary shore-side infrastructure to accommodate the use of shore power by the required deadlines. ARB expects to pursue a separate shore power regulation targeting bulk ships, tankers, and vehicle carriers in a future rulemaking.

Emission Standards

- U.S. EPA Harbor Craft Emission Standards: U.S. EPA harbor craft emission standards apply to new diesel-powered engines with a displacement of up to 30 liters per cylinder. Tier 2 standards apply to both propulsion and auxiliary engines and were phased-in based on engine size between 2004 and 2007. U.S. EPA adopted Tier 3 and 4 harbor craft engine emission standards in March 2008. Tier 3 standards tighten NOx limits by about 20 percent and PM by 25 to 60 percent, depending on engine size, compared to Tier 2 standards. Aftertreatment-based Tier 4 standards reduce allowable NOx by up to 85 percent and PM by up to 95 percent, depending on the horsepower. Tier 3 standards begin phasing in for some of the smallest marine engines in 2009. The new U.S. EPA rule also requires most marine engines with greater than 800 horsepower meet remanufacture emission standards upon remanufacture if a certified remanufacture kit is available to meet these standards. (For more information regarding existing federal harbor craft engine standards, please see the U.S. EPA Diesel Ships and Boats webpage at: www.epa.gov/otaq/marine.htm)

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program marine vessel projects. Marine vessel projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional requirements in order to address local concerns.

(a) General Marine Project Criteria

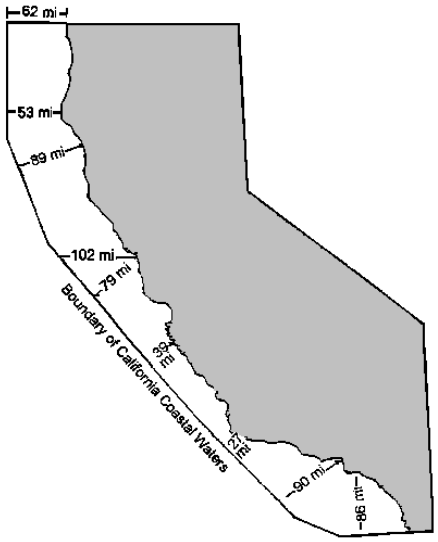
(1) Marine vessels and engines utilizing an alternative compliance plan to comply with a rule, requirement, or other mandate shall not be eligible for Carl Moyer Program funds.

(2) To be eligible for Carl Moyer Program funding, a project harbor craft 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, 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. This information must be included in the project application. A project application for an oceangoing vessel that does not have any of the above documentation must include the vessel's Lloyd's/IMO number.

(3) Both propulsion and auxiliary marine engines are eligible for Carl Moyer Program funding.

(4) Only marine vessel activity in California coastal waters and internal waters may be used to determine project emission reductions. Figure 9-1 depicts California coastal waters. For the purposes of the Carl Moyer Program, California water boundaries are based upon each air districts' emission inventory boundary. If a local district has not established an emission inventory boundary, the ARB and district staff will determine an appropriate boundary for use in project evaluation.

Figure 9-1
California Coastal Water Boundaries



(5) Non-captive California fleets and vessels may be considered for funding on case-by-case basis if their operation in California coastal waters can be properly documented.

(6) Marine vessel engines with a functioning hour meter must base project cost-effectiveness calculations and eligibility on hours of operation. If the applicant did not have a functioning hour meter to document historical hours of operation, historical fuel usage may be used. Historical fuel usage must be based on two years of historical fuel usage documentation specific for the vessel being funded. Documentation may include fuel logs, purchase receipts or ledger entries.

(7) Excursion, ferry, tug or tow boat project applications received after February 28, 2009 must include a copy of the most recent Initial Report required by Section (h)(1) of ARB's Harbor Craft Regulation. As of this date, a project participant's Annual Reports to air districts must also include a copy of the most recent Harbor Craft Regulation Initial Report. Air districts are responsible for ensuring that the engine hours of operation and other information included in the project application and Annual Report are consistent with that included in the rule Initial Report.

(8) Vessels which are not self-propelled (e.g. barges) are not eligible for Carl Moyer Program funding.

(9) Funding is only available for retrofit or repower projects if the baseline engine is a diesel engine.

(10) U.S. EPA Harbor Craft Emission Standards, finalized on March 14, 2008, require most harbor craft engines greater than 800 horsepower meet remanufacture emission standards upon remanufacture if a certified remanufacture kit is available. Pre-1973 model year engines and fleet owners and operators with less than $5 million in gross annual sales revenue are exempt from this aspect of the federal regulation. Since this new federal requirement has the potential to impact the default baseline emission level for a Carl Moyer Program project, vessels with a baseline engine greater than 800 horsepower shall be evaluated for funding on a case-by-case basis. District staff must consult with ARB prior to funding such a project to determine project emission reductions and cost-effectiveness.

(11) Only marine engines greater than or equal to 25 horsepower are eligible for Carl Moyer Program funding.

(12) 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. See Appendix D for an example of how to calculate project emission reductions and cost-effectiveness for a vessel with a wet exhaust system.

(13) Tables 9-3 and 9-4 summarize the dates by which projects on harbor craft subject to ARB's Harbor Craft Regulation must be complete to be eligible for Carl Moyer Program funding. In the case of engine repowers, the Moyer Project Completion Deadline indicated in these tables reflects the date by which the new vessel engine must be installed and operational. In addition, project life for an engine cannot extend beyond that engines compliance deadline. For example, a 1980 model year engine operating 750 hours annually that is installed in December 2008 has a compliance deadline of December 31, 2012 (assuming vessel homeport outside of the South Coast), and therefore would have a maximum project life of four years.

(14) Harbor craft engines between 25 and 50 horsepower are exempt from ARB's Harbor Craft Regulation and are therefore not required to be repowered three years prior to the compliance deadlines in tables 9-3 and 9-4 to be eligible for Carl Moyer Program funding.

Table 9-3
Carl Moyer Program Project Completion Deadline for In-Use Ferries, Excursion Vessels, Tugboats, and Towboats, with Homeport Outside the South Coast AQMD

Engine Model Year	Total Annual Hours of Operation	Proposed Rule Compliance Deadline	Moyer Project Completion Deadline
Pre-1975	≥ 300	2009-10	No funds available
1976-1985	≥ 1500	12/31/2011	12/31/2008
1976-1985	300-1500	12/31/2012	12/31/2009
1986-1995	≥ 1500	12/31/2013	12/31/2010
1986-1995	300-1500	12/31/2014	12/31/2011
1996-2000*	≥ 1500	12/31/2015	12/31/2012
1996-2000*	300-1500	12/31/2016	12/31/2013
2001-2002	≥ 300	12/31/2017	12/31/2014
2003+	≥300	12/31/2018	12/31/2015

Harbor craft engines between 25 and 50 hp are exempt from the rule.
*1996 through 1999 model year engines in ferries have an accelerated rule compliance deadline of 12/31/2014. The Carl Moyer Program project completion deadline for these engines is therefore 12/31/2011.

Table 9-4
Carl Moyer Program Project Completion Deadline for In-Use Ferries, Excursion Vessels, Tugboats, and Towboats with Homeport in the South Coast AQMD

Engine Model Year	Proposed Rule Compliance Date	Moyer Project Completion Deadline
Pre-1986	2009-10	No funds available
1986-1990	12/31/2011	12/31/2008
1991-1995	12/31/2012	12/31/2009
1996-2000	12/31/2013	12/31/2010
2001	12/31/2014	12/31/2011
2002	12/31/2015	12/31/2012
2003	12/31/2016	12/31/2013
2004	12/31/2017	12/31/2014
2005	12/31/2018	12/31/2015

Harbor craft engines between 25 and 50 hp are exempt from the rule.

(15) The following criteria apply to engines subject to ARB's Harbor Craft Regulation:

(A) Harbor craft engines receiving a rule compliance extension are ineligible for Carl Moyer Program funding.

(B) Harbor craft engines demonstrating compliance with the regulation through an Alternative Control of Emissions (ACE) are ineligible for Carl Moyer Program funding.

(C) Engines that demonstrate rule compliance through a mechanism other than engine replacement or installation of an ARB- or U.S. EPA-verified retrofit device are not eligible for Carl Moyer Program funding.

(D) To ensure project eligibility is not based on a Carl Moyer Program-funded compliance extension, vessel engines rebuilt or remanufactured to a cleaner emission standard (such as an IMO standard) with Carl Moyer Program funds prior to January 1, 2008 shall use the engine model rather than the date of remanufacture to determine funding eligibility and project life. Vessel engines rebuilt with a rebuild kit certified by U.S. EPA or the International Maritime Organization to achieve at least a 25 percent PM emission reduction shall use the engine model year plus five years, consistent with Section (e)(6)(C) of the ARB Harbor Craft Regulation, to determine the engine model year used in tables 9-3 and 9-4. Projects basing surplus reductions on this model year plus five option must include documentation of the original rebuild kit U.S. EPA or IMO certification to achieve the required PM reductions as part of their project application.

(b) Repower

To date, most Carl Moyer Program marine vessel projects have involved replacing or "repowering" an old harbor craft engine with a newer, cleaner engine. Most of these projects have involved replacing an older mechanical engine with a newer electronically controlled engine.

(1) All new harbor craft engines and replacement engines purchased for Carl Moyer Program harbor craft repower projects must be certified to meet U.S. EPA Tier 2 or cleaner marine engine emission standards. Tier 2 engines that are less than or equal to 100 horsepower and are installed after January 1, 2009 are only eligible for Carl Moyer Program funds if it can be demonstrated that a Tier 3 engine is unavailable or technically infeasible.

(2) For all Carl Moyer Program engine repowers, any replacement engine must provide at least a 15 percent NOx reduction relative to the baseline engine. If the replacement engine is significantly modified or re-configured in any way during the project life, emissions testing must be conducted to determine its new emission rates.

(3) 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.

(4) The maximum percent of the total marine engine repower costs eligible for Carl Moyer Program funding depend upon the vessel type and newer engine Tier, as follows:

(A) Tier 2 Repower:
- Excursion, ferry, tug, or tow boats – 50 percent
- Fishing, pilot/work, or crew & supply vessels – 80 percent

(B) Tier 3 Repower:
- All vessels – 85 percent

(5) A Carl Moyer Program grant for a marine vessel repower shall not exceed the total project repower cost multiplied by the percent of eligible funding for each vessel category, as identified above (i.e. the Carl Moyer Program may pay up to 50 to 85 percent of the total repower cost, depending upon the vessel type and new engine tier).

(6) The total project repower cost may include charges for the following:

(A) The capital cost of the new engine.
(B) 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.
(C) 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.
(D) Tax and transport for eligible parts or costs.
(E) Labor for installation of or modification to parts eligible for funding.

(7) The total project repower cost may not include charges for the following:

(A) Rudders or propellers.
(B) Steering system.
(C) Sea trials and dry docking.
(D) Paint, coatings, or hull work not directly related to the engine repower.
(E) Tax and transport for ineligible parts or costs.
(F) Labor for installation of or modification to parts ineligible for funding.
(G) Any parts or labor typically included as part of the vessel or engine overhaul, maintenance, repair, or upkeep.
(H) 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.

(8) All engines replaced as part of a marine vessel repower project must be scrapped, consistent with the requirements of Part III, Section 31.

(c) Shore Power (Cold Ironing)

To date, interest in Carl Moyer Program funding for shore power projects has been limited. However, due to concern about increased emissions from oceangoing vessels at California ports, as well as increased regulatory efforts, demand for project funding is expected to increase.

(1) Up to 50 percent of the total cost of a shore power transformer (whether on board the vessel or at dock) is eligible for Carl Moyer Program funding.

(A) Shore-side transformer costs at goods movement berths (i.e. berths involved in the movement of goods rather than passengers) in the South Coast, Bay Area, and San Diego air districts, as well as Port Hueneme, are not eligible for Carl Moyer Program in any fiscal year in which bond funding is available for shore power projects. Shore-side costs for goods movement vessel berths in these areas may be eligible for Carl Moyer Program funding on a case-by-case basis if it can be reasonably demonstrated that Proposition 1B funding is unavailable.

(2) Up to 100 percent of on-board (non-transformer) retrofit costs specifically required to allow the vessel to plug into shore power are eligible for Carl Moyer Program funding.

(3) The Carl Moyer Program shall fund only the marine vessel retrofit modifications necessary for a vessel to receive shore power while at berth, including costs for a transformer, whether the transformer is on the ship or at the marine vessel terminal. 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. All State grant and local match funding used for a shore power project, including Proposition 1B funds, shall be included in the Carl Moyer Program project cost-effectiveness calculation.

(4) 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 power.

(5) Only a port authority, terminal operator, or marine vessel owner or authorized operator may apply to receive Carl Moyer Program funding for a shore power project.

(6) Applicants for a shore power project must demonstrate that usage of shore power will be adequate to meet the Carl Moyer Program cost-effectiveness cap.

A demonstration of usage must include, for shore-side transformer funding, the names of vessels that are able and committed to the use of shore power for a specific number of visits and hours. Applicants for on-ship retrofit funding must demonstrate availability of shore power and commit to a number of vessel visits and hours per year. The commitment of hours made by the applicant must be used in the project cost-effectiveness calculation and must be required by the contract between the applicant and the air district.

(7) The Carl Moyer Program shall pay for a shore power project based on project usage. 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. Alternately, if the project was not funded at the Carl Moyer Program cost-effectiveness cap, the district may opt to require the applicant return only those funds associated with the usage shortfall had the project been funded at the program cost-effectiveness limit. Finally, the project participant may opt to extend the life of the contract to ensure the usage requirement is met. However, terminal operators and vessels subject to a regulation may not extend their contract beyond the regulation's initial compliance deadline, unless the project is surplus to the regulation.

(8) Shore power projects at terminals or on vessels subject to ARB's Shore Power Regulation must be complete and operational no later than January 1, 2011 in order to achieve three years of surplus emission reductions and be eligible for Carl Moyer Program funding. 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 complete and operational by this date, unless the original funding application provides evidence that the project shall be surplus to the 2014 implementation requirements of ARB's Shore Power Regulation.

(9) 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. Oceangoing vessels and terminals subject to an ARB's Shore Power Regulation must use a project life which concludes no later than the regulation's initial compliance deadline. Projects with a project life that extends beyond 2014 may be eligible for funding on a case-by-case basis if it can be proven that the project funds only emission reductions which are surplus to the ARB Shore Power Regulation.

(10) Terminals using or intending to use the Equivalent Emission Reduction Option to demonstrate compliance with the Shore Power Regulation are only 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.

(11) Applications for Carl Moyer Program funding of shore power projects submitted after July 1, 2009 shall 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 shall include any new or updated Terminal Plans in order to evaluate compliance with the project contract.

(12) The emissions from vessels using grid power in lieu of the vessels 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 B.

(d) Engine Remanufacture Kit

Engine remanufacture kits have the potential to reduce emissions from older engines in cases when an engine repower is not technically feasible. However, emission reductions from engine remanufacture kits have the potential to be shorter lived than reductions from an engine repower, and some of these kits may result in increased PM emissions in order to achieve NOx reductions. Carl Moyer Program criteria for engine remanufacture kit projects help ensure these reductions are real and endure for the full project life.

(1) Engine remanufacture kits must be certified by ARB, U.S. EPA or the International Maritime Organization (IMO) to meet marine Tier 2 or cleaner emission standards for NOx, PM, and hydrocarbons. Remanufacture kits certified to meet emission standards for NOx only are not eligible for Carl Moyer Program funding.

(2) The percent of marine engine remanufacture costs eligible for Carl Moyer Program funding are:

(A) Tier 2 Remanufacture:
- Excursion, ferry, tug, or tow boats – 50 percent
- Fishing, pilot/work, or crew & supply vessels – 80 percent

(B) Tier 3 Remanufacture: All vessels – 85 percent

(3) Remanufacture kit projects have a maximum project life of six years. 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 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 (if applicable) is completed on schedule. Maintenance other than replacement of low-emission fuel injectors is not eligible for Carl Moyer program funding.

(e) 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. Because of the lack of retrofit devices verified for use on a marine vessel engine, a marine vessel retrofit device which is not yet verified may be considered for funding on a case-by-case basis.

(1) A retrofit device must be ARB-verified to reduce emissions from the project engine in order to be eligible for funding. Non-verified technologies may be considered on a case by case basis if: 1) an application for verification of the retrofit or add-on equipment on the proposed engine category is pending; 2) the retrofit or add-on equipment has been verified or certified by ARB for use on a similar engine category; or 3) project emission benefit, durability, and applicability have been or shall be demonstrated through in-situ testing.

(2) Retrofits considered for funding on a case-by-case basis must be clearly demonstrated to achieve the expected emission reductions for the full project life, to function properly under the project vessel engine duty cycle, and to not harm the vessel engine.

(3) Up to 100 percent of the total cost of a marine retrofit project is eligible for Carl Moyer Program funding.

(f) 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.

(1) The eligible costs for a marine vessel new purchase project shall reflect the difference between the cost of the cleaner-than-required vessel and the cost of a similar vessel that meets existing standards.

(2) 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.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

For the purposes of the Carl Moyer Program, marine vessel project and criteria definitions are as follows:

Auxiliary Engine: An auxiliary engine refers to a marine vessel engine that is not the propulsion engine and whose fuel, cooling, or exhaust systems are an integral part of the vessel.

Barge: A long, usually flat-bottomed boat which is not self-propelled and is typically towed or pushed by a marine vessel.

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.

Charter Fishing Vessel: A charter fishing vessel is a vessel for hire by the general public, dedicated to the search for and collection of fish for the purpose of general consumption.

Commercial Fishing Vessel: A commercial fishing vessel is a vessel dedicated to the search for and collection of fish which are intended, either in whole or in part, to be sold at market or directly to a purchaser.

Crew and Supply Vessel: A vessel used for carrying personnel and/or supplies to and from off-shore or in-harbor locations (including, but not limited to, off-shore work platforms, construction sites, and other vessels).

Excursion Vessel: An excursion vessel is any 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.

Ferry: A ferry refers to 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.

Harbor Craft: Harbor craft include any private, commercial, government, or military marine vessel, including but not limited to crew and supply vessels, emergency

response vessels, excursion vessels, ferries, fishing vessels, pilot vessels, research vessels, tow boats, tug boats, work boats, that do not otherwise meet the definition of a recreational vessel or oceangoing vessel.

Homeport: A vessel homeport refers to the port in which a vessel is registered or permanently based.

Pilot Vessel: A vessel designated for the transfer and transport of maritime pilots to and from oceangoing vessels while such vessels are underway.

Propulsion Engine: A propulsion engine is a marine engine that propels the vessel through the water or directs the direction of the vessel.

Shore Power: Shore power refers to shutting down auxiliary engines on oceangoing or passenger ships while in port and connecting to electrical power supplied at the dock. Shore power is also known as "cold-ironing" or alternative maritime power.

Tow Boat: A tow boat refers to 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 barges.

Tug Boat: A tug boat refers to a 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 tugs, ocean-going or long-haul tugs, and barge tugs. “Tug boat” is interchangeable with “tow boat” and “push boat” when the vessel is used in conjunction with barges.

VII. References

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ARB, March 2006. Evaluation of Cold-Ironing Oceangoing Vessels at California Ports.

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Federal Register, 1999. Federal Register - Environmental Protection Agency, Control of Emissions of Air Pollution From New Marine Compression-Ignition Engines at or Above 37 kW, December 29, 1999 (Volume 64, Number 249).

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Chapter 10: AGRICULTURAL SOURCES

This chapter describes the minimum criteria and requirements for Carl Moyer Program non-mobile agricultural engine projects and non-engine agricultural projects. Requirements for mobile agricultural use equipment (e.g. tractors) may be found in Chapter 5: Off-Road Compression Ignition Equipment. Local air districts may set more stringent requirements based on local priorities.

I. Projects Eligible for Funding

ARB has adopted an ATCM for stationary diesel in-use agricultural engines. There are limited funding opportunities for engines subject to this rule. The first step in evaluating Moyer eligibility is determining whether an engine or project type is subject to a rule:

Table 10-1
Summary of Agricultural Sources Funding Opportunities

Engine or project type	Subject to ARB Rule?	Moyer Funding Opportunities*
Stationary diesel agricultural engine repower projects	Stationary Diesel In-Use Agricultural Engines ATCM	Tier 3 repowers eligible through 12/31/09 or 12/31/10 (depending on horsepower); Tier 4 repowers eligible through 12/31/13, 12/31/14 or 12/31/15 (depending on horsepower); Engines exempt from ATCM remain eligible for Tier 3 and Tier 4 repowers.
Stationary spark-ignited agricultural engine repower projects	No	May be limited by local district rules. Diesel engines (subject to ATCM) repowered with spark-ignited engines are eligible through ATCM compliance dates.
Electric motors new purchase and repower projects	No	Diesel engine (subject to ATCM) to electric motor repower projects eligible through ATCM compliance dates. Diesel engine (exempt from ATCM) to electric motor projects, Spark-ignited engine to electric motor projects, and electric motor new purchase projects remain eligible for funding.
Non-engine agricultural use projects	No	May be limited by local district rules

**Limited funding opportunities* means that a projects funding opportunities may be impacted by the compliance dates of the ATCM. Contact district Moyer Program staff or consult fleet rule Moyer implementation charts at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm in addition to these guidelines.*

Project Types: Taking the above table into consideration, the following categories are eligible projects:

- **Engine Repower.**
- **New Purchase.** The Carl Moyer Program allows funding for the purchase of electric motors for new, non-replacement stationary equipment installations.
- **ARB-verified Retrofit Device.**
- **Non-Engine Agricultural Use Projects.** Non-engine agricultural use projects may receive Carl Moyer Program funding with approval from ARB staff on a case-by-case basis.

Please see Section IV (Project Criteria) for detailed minimum eligibility requirements for all agricultural sources project categories.

II. Maximum Eligible Funding Amounts

The percent of agricultural source engine project costs eligible for Carl Moyer Program funding are:

- Tier 3 and 4 Repower – 85 percent
- Certified SI engine Repower – 85 percent
- Electric motor repower – 85 percent
- Electric motor new purchase – 20 percent
- Retrofit device – 100 percent

Projects are also subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Local air districts have the authority to set more stringent project requirements. Projects must also meet all other relevant criteria in Section IV of this chapter.

III. Regulatory Background

State law requires that Carl Moyer Program projects provide emission reductions early or beyond what is required by regulation, memorandum of understanding (MOU), or other legally binding document. Carl Moyer Program agricultural sources projects must therefore be surplus to the following to be eligible for funding:

- Stationary Diesel Engine ATCM: In February 2004, the Board adopted an ATCM for stationary compression ignition (CI) engines greater than 50 horsepower [ARB, 2003]. The Board amended the ATCM in May 2005 [ARB, 2005] and November 2006 [ARB, 2006]. The control measure requires new CI engines for agricultural operations, including those used to repower agricultural equipment, to meet current ARB and federal new off-road engine PM certification standards for engines of the same horsepower and model year. New and in-use agricultural wind machine engines and in-use engines that are less than 50 horsepower, agricultural emergency standby generator set engines, or "remotely located agricultural engines" are exempt from the ATCM's emission limitations. Non-exempt in-use (existing)

stationary agricultural engines are required to meet Tier 3 or Tier 4 emission standards for engines of the same horsepower by specific compliance dates. Table 10-2 and 10-3 summarize the compliance requirements for uncontrolled and Tier 1/Tier 2 engines, respectively. At the November hearing, the Board adopted a provision specific for agricultural engines replaced with Carl Moyer grant funds that allows projects to have a one year project life.

Table 10-2
Non-certified In-Use Stationary Diesel Agricultural Engine Emission Limits

Horsepower Range	Compliance Date	Diesel PM Not to Exceed (g/bhp-hr)	Off-Road CI certification Standard
> 50 to 99 hp	December 31, 2011	0.30	Tier 3 or Interim Tier 4
100 to 174 hp	December 31, 2010	0.22	Tier 3
175 to 750 hp	December 31, 2010	0.15	Tier 3
> 750 hp	December 31, 2014	0.075	Tier 4

Table 10-3
Tier 1 and Tier 2-certified In-Use Stationary Diesel Agricultural Engine Emission Limits

Horsepower Range	Compliance Date	Diesel PM Not to Exceed (g/bhp-hr)	Off-Road CI certification Standard
> 50 to 75 hp	December 31, 2015*	0.02	Tier 4
75 to 174 hp	December 31, 2015*	0.01	Tier 4
175 to 750 hp	December 31, 2014*	0.01	Tier 4
> 750 hp	December 31, 2014*	0.075	Tier 4

* Or 12 years after the date of initial installation, whichever is later

- Portable Diesel Engine ATCM: An ATCM for portable diesel engines was adopted by the Board in February 2004 [ARB, 2004], and amended in March 2007 [ARB, 2007]. The control measure requires all diesel-fueled portable engines 50 horsepower and greater to be certified to Tier 1, 2, or 3 federal and state off-road engine emission standards by 2010. The ATCM also requires portable engines 50 horsepower and greater to meet progressively more stringent fleet-averaged particulate matter emission standards in 2013, 2017, and 2020.

  In January 2008, ARB advised local air districts of a memorandum presenting ARB legal staff's interpretation that portable diesel engines used exclusively at an agricultural source are subject to the Stationary Diesel Engine ATCM. As such, these engines are also eligible for a minimum project life of one year. This does not include engines that are owned by rental/leasing companies and are used (but not exclusively used) in agricultural operations.

- Local Air District Rules: Existing and future district rules impacting agricultural sources must be considered when determining whether projects provide reductions surplus to regulatory requirements.

  – Internal combustion engines: A number of local air districts have amended their internal combustion engine rules to include engines used in agricultural operations. In these districts, stationary internal combustion engines used in agricultural operations are now required to meet the emission standards/limits, permitting conditions, and compliance requirements of the local district.

  – Large Confined Animal Facilities: Local air districts in federal ozone non-attainment areas are required to adopt rules to mitigate emissions from large confined animal facilities (CAFs). Local air districts in federal ozone attainment areas are also required to develop rules to mitigate large CAF emissions unless their district boards make a finding in a public hearing that large CAFs will not contribute to violations of state or federal standards. A number of air districts have or are preparing to adopt regulations to meet these requirements.

  – Fugitive Dust Control: A number of air districts require agricultural operations to reduce fugitive dust emissions through local rules. Local rules for particulate matter dust control generally require agricultural operations to implement a variety of practice-specific options to reduce particulate matter. These practices may include methods to reduce the movement of soil during land preparation, cultivation, and harvesting, suppression of dust on unpaved roads, alternatives to burning, and reduction of agricultural chemical applications.

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program agricultural source projects. Agricultural source projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional or more restrictive requirements to address local concerns.

(a) General Agricultural Sources Project Criteria

(1) The maximum project life for agricultural use engine projects is as follows:

(A)	Diesel engines	7 years
(B)	Spark-ignited engines	7 years
(C)	Electric motors	10 years

A longer project life may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(2) Projects must have a minimum project life of three years, with the exception of engines subject to the agricultural engine requirements in the Stationary Diesel Engine ATCM.

(3) An engine must be rated at greater than 25 hp, which is equivalent to an electric motor greater than 19 kW.

(4) Emission reduction technologies must be certified/verified by the ARB and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified. If the emission reduction technology is not certified or verified, it may be approved by the ARB on a case-by-case basis.

(5) Costs for necessary peripheral equipment associated with electric motor projects (e.g. control panel, motor leads, service pole with guy wire, and connecting electric line from the meter) may be included in the grant award amount.

(A) Variable frequency devices are eligible for funding if the applicant provides justification for adjustable water needs.
(B) Reduced voltage starting ("soft start") technology is eligible for funding if required by the electric service provider.

(6) District match funds may be used for infrastructure purchase and installation (e.g. line extension for electric motor projects).

(7) 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.

(8) Cost-effectiveness calculations must use the hour based formula as discussed 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.

(9) 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.

(10) All case-by-case projects must receive approval from ARB prior to funding. These projects must follow the requirements described in Part III, Section 28.

(b) 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.

(1) A repower of an uncontrolled or emission certified (1996+ model year) engine must be with one of the following:

(A) A new electric motor.
(B) A new off-road diesel engine certified to the current applicable emission standards.
(C) A new off-road spark-ignited (SI) engine certified to the current applicable emission standards.
(D) A new SI engine that exceeds local district emission requirements and is subject to and complies with local district permitting, monitoring, record keeping and reporting requirements.

(2) Diesel engines greater than 50 hp must be registered (or permitted) in a local air district to be eligible for repower projects.

(3) SI engines cannot be replaced with diesel engines.

(4) A repower of an emissions-controlled SI engine with a new SI engine that meets or exceeds local district emission requirements and is subject to and complies with local district permitting, monitoring, record keeping and reporting requirements, must use an engine that provides a NOx emission reduction of at least 15% from the baseline engine NOx emissions.

(5) An uncontrolled engine subject to the Stationary Diesel Engine ATCM may use a project life for a repower project with a new diesel engine as follows:

Horsepower range	Project Life
< 100 hp	3 year project life through 12/31/08
	2 year project life through 12/31/09
	1 year project life through 12/31/10
100-750 hp	2 year project life through 12/31/08
	1 year project life through 12/31/09
> 750 hp	6 year project life through 12/31/08
	5 year project life through 12/31/09
	4 year project life through 12/31/10
	3 year project life through 12/31/11
	2 year project life through 12/31/12
	1 year project life through 12/31/13

(6) For more information on eligibility of stationary diesel in-use agricultural engines, please see the Stationary Diesel In-Use Agricultural Engine Carl Moyer Program Implementation Chart available through your local district or at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(7) Engines > 750 hp are not eligible for Tier 2 repower projects.

(8) Uncontrolled portable engines owned by rental companies are not eligible for Carl Moyer Program funding due to the Portable Equipment ATCM compliance date.

(9) The percent of repower costs eligible for Carl Moyer Program funding are:

(A) Tier 3 and 4 repower – 85 percent
(B) Certified SI engine repower – 85 percent
(C) Electric motor repower – 85 percent

(10) Electric motors may replace diesel or spark-ignited engines. The applicant must have documentation of payment to the local utility company for power installation. This requirement of documentation also applies to new installations.

(11) Off-road diesel engines must be certified for sale in California and must comply with durability and warranty requirements.

(12) The use of a non-certified SI engine shall be subject to approval by ARB staff.
(A) Non-certified SI engines shall be required to include currently available emission control components such as closed-loop fuel control systems, and three-way catalysts.
(B) Non-certified SI engines shall be subject to source testing with an ARB-approved testing procedure, such as ARB Test Method 100, following local district requirements. Source testing shall be conducted upon installation.
(C) Non-certified SI engines must be emission tested using a portable analyzer every 1,000 hours of operation and at least annually, or following local 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.
(D) The costs associated with source testing and monitoring requirements for non-certified SI engines are not eligible for funding.

(13) All engines replaced as part of a repower project must be destroyed and rendered useless, consistent with the requirements of Part III, Section 31(c).

(c) New Purchase

A new purchase is an engine or motor that is not replacing an existing engine.

(1) Engine purchases for new 2008 or later model year non-mobile agricultural equipment can only be electric motors.

(2) Carl Moyer Program funding may be used for up to 20 percent of the costs associated with a new purchase.

(d) Retrofit

A retrofit is a modification to an engine and/or fuel system such that the specifications of the retrofitted engine are not the same as the original engine. More information on retrofits, including a list of currently verified retrofits, may be found at http://www.arb.ca.gov/diesel/verdev/verdev.htm.

(1) A retrofit of an uncontrolled diesel engine 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 for a given engine size.

(2) A retrofit of an uncontrolled SI engine that reduces NOx must be with a retrofit kit that is verified to reduce NOx+NMHC emissions to the currently applicable standard for off-road large spark-ignited engines.

(3) A retrofit of an emission-certified (1996+ model year) off-road diesel engine that reduces NOx must be with a retrofit kit that is verified to reduce NOx or NOx+NMHC emissions by at least 15 percent from the applicable NOx or NOx+NMHC emission standard.

(4) Retrofit projects that control PM must use the highest level ARB-verified technology available for the engine being retrofitted.

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

(6) The cost of the retrofit, filters, and maintenance of the retrofit device needed during the project life may be paid for with incentive funds provided it meets the cost-effectiveness limit.

(7) Retrofit projects are eligible for up to 100 percent reimbursement using Carl Moyer Program funds.

(e) Non-Engine Agricultural Use Projects

(1) Non-engine agricultural use projects are subject to ARB staff approval on a case-by-case basis.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate project cost-effectiveness.

VI. Definitions

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.

Tier 1, 2, and 3 Engines: Engines that are subject to title 13, CCR, section 2423(b)(1)(A) and/or Title 40, CFR, Part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 1 Family Emission Limits (FEL) listed in title 13, CCR, section 423(b)(2)(A) and/or Title 40, CFR, Part 89.112(d).

Tier 4 Engine: Engines that are subject to the interim or final after-treatment based Tier 4 emission standards in title 13, CCR, section 2423(b)(1)(B) and/or Title 40, CFR, Part 1039.101. This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in title 13, CCR, section 2423(b)(2)(B) and/or Title 40, CFR, Part 1039.101.

VII. References

ARB, 2003. Air Resources Board. Staff Report: Initial Statement of Reasons, Airborne Toxic Control Measure for Stationary Compression Ignition Engines. http://www.arb.ca.gov/regact/statde/isor.pdf

ARB, 2004. Air Resources Board. Staff Report: Initial Statement of Reasons, Airborne Toxic Control Measure for Diesel-fueled Portable Engines. http://www.arb.ca.gov/regact/porteng/isor.pdf

ARB 2005. Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Revisions to the Airborne Toxic Control Measure for Stationary Compression Ignition Engines. http://www.arb.ca.gov/regact/statde05/isor.pdf

ARB 2006. Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Requirements for Stationary Diesel In-Use Agricultural Engines. http://www.arb.ca.gov/regact/agen06/isor.pdf

ARB 2007. Air Resources Board. Staff Report: Initial Statement of Reasons for Proposed Amendments to the Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines.
http://www.arb.ca.gov/regact/2007/perp07/isor.pdf

Chapter 11: LIGHT-DUTY VEHICLES

This chapter describes the minimum criteria and requirements for Carl Moyer Program light-duty vehicle projects.

I. 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). 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 Moyer and CAP projects are administered and operated in a consistent manner but accept vehicles at different times within the Smog Check cycle. Generally, the Moyer program accepts vehicles that have passed the last Smog Check, and the CAP accepts vehicles that have failed their current Smog Check.

- **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.

- **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.

II. Maximum Eligible Funding Amounts

Projects are subject to a $16,000 per weighted ton of emissions reduced cost-effectiveness threshold. Local air districts have the authority to set more stringent project requirements. Projects must meet all other relevant criteria in Section IV of this chapter.

III. Regulatory Background

Light-duty vehicle retirement projects are subject to the requirements of the Voluntary Accelerated Vehicle Retirement (VAVR) regulation, title 13, California Code of Regulations (CCR), Chapter 13, Article 1, Sections 2601 through 2610.

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 the ARB. This chapter constitutes the ARB's adopted guidelines for light-duty projects.

IV. Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program light-duty vehicle projects. Light-duty vehicle projects must also conform to general criteria of Chapter 2, as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration. Participating districts retain the authority to impose additional or more restrictive requirements to address local concerns.

(a) 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 8,500 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 district in which the VAVR enterprise or VRV program is operated. Smog Checks must be performed as required by the 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 section 4604, et seq., for up to 2 months during the 24 month registration period and occurring at least 3 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 6 months during the previous 24 months and all appropriate registration fees and late penalties have been paid to the DMV, provided

that the vehicle is registered for at least 3 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 Title 16, CCR, Division 33, Chapter 1, Article 5.5, section 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 regulations and approved by the 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 Title 16, CCR, Division 33, Chapter 1, Article 5.5, Section 3340.42, as listed on BAR's web site at: http://www.smogcheck.ca.gov/ftp/pdfdocs/asm_ph43.pdf.

(A) Vehicles not testable under the Acceleration Simulation Mode (ASM) Smog Check test may be given a Two Speed Idle (TSI) Smog Check test to determine eligibility and estimate hydrocarbon emissions.

(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 a "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.

(b) 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 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 ARB's VAVR regulation.

(c) 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 Title 13, CCR, Division 3, Chapter 1, Article 6, section 2035 et seq. and Article 1, section 1961.

(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.

(d) 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 after the repairs exceed the standards, 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 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 district. The district must retain a copy.

(A) An example of a standardized diagnostic form is provided in Figure XI-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 the 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 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.

(e) Emissions Measured by the Two Speed Idle Test

(1) Emission rates of certain vehicles are not testable by the ASM Smog Check test such as four wheel and all wheel drive vehicles and 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.

(f) District Project Plan Requirements

(1) A district shall submit a detailed VAVR and/or VRV project plan to the ARB for approval and must receive written approval from the 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 the ARB in writing.

(2) The district project plan shall include the following:

(A) The name, title, and telephone number of the 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 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 a 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 a 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 vehicles owners.

(g) Recordkeeping and Reporting

(1) For each vehicle retired or repaired, the district shall retain the following records for inclusion in the annual report to the 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 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 the 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 the DMV verifying that a vehicle meets the vehicle registration requirements of the ARB's VAVR regulations.
(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) Districts and enterprise operators shall retain these records for the life of the project plus an additional 3 years.

(h) Minimum Project Application Requirements

(1) Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log,

including the information needed to track the project and calculate project cost-effectiveness.

(i) Offering Vehicles/Parts to the Public (VAVR only)

(1) Enterprise operators must inform the district of the vehicles ready for dismantling, and the 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 the DMV, and if an interested person contacts the enterprise operator, the enterprise operator must hold the vehicle for at least another 7 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.

NOTE: Please refer to Appendix E for a discussion of the methodologies for estimating emission reductions and cost-effectiveness.

Figure XI-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. Districts may design other forms consistent with the content of this form.**

THE CARL MOYER PROGRAM GUIDELINES

PART II of IV

AGRICULTURAL ASSISTANCE PROGRAM

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.

I. 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 local districts to increase motor vehicle fees by up to an additional $2. Districts receiving the additional $2 surcharge may use the funds to implement four specific programs:

- projects funded through the Carl Moyer Program.
- the new purchase, retrofit, repower, or add-on of previously unregulated equipment for agricultural sources.
- school bus purchases through the Lower Emission School Bus Program.
- an accelerated vehicle retirement or repair program.

The Agricultural Assistance Program was created to implement the second program listed above. Qualified projects are eligible for funding for a minimum of three years from the date of adoption of an applicable rule or standard, or until the compliance date of that rule or standard, whichever is later. The emission benefits of projects funded by the Agricultural Assistance Program are already counted in the emission benefits of individual local or state rules. District funds applied to the Agricultural Assistance Program do not count for district match funds in the Carl Moyer Program.

"Agricultural source of air pollution," for the purposes of AB 923 and the Agricultural Assistance Program, is defined in HSC 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:

- Large confined animal facilities (CAFs).
- Internal combustion engines, including portable and off-road engines, unless used to propel instruments of husbandry.
- Sources subject to requirements of Title V, the federal Operating Permitting Program for major stationary sources.
- Sources of emissions otherwise subject to district regulation.

The statutory provisions of AB 923 also require that Agricultural Assistance Program projects follow the Carl Moyer Guidelines. Project criteria in the "Administration of the

Carl Moyer Program" chapter and the "Agricultural Sources" chapter are to be followed (except as specified in Section III below), with modifications to the surplus emission reductions requirements and cost-effectiveness methodology.

II. Projects Eligible for Funding

The statutory provisions of AB 923 include requirements for Agricultural Assistance Program eligible projects:

- Projects must involve the new purchase, retrofit, repower, or add-on of equipment.

- 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.

- Projects must be funded within three years of rule adoption or before the compliance date of the rule, whichever is later.

- The ARB must determine that the applicable rule complies with HSC sections 40913, 40914, and 40915 pertaining to district attainment plan measures. District 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 district rules for compliance with these requirements and will treat agriculture-related rules the same way.

Eligible project categories may be found in Chapter 10 (Agricultural Sources) of the proposed 2008 Carl Moyer Program Guidelines.

III. Project Criteria

Project criteria in Part I, Chapter 2 (General Criteria) and Chapter 10 (Agricultural Sources) as well as the project application, contract, reporting, and other requirements as described in Part III: Program Administration, of the proposed 2008 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.

IV. 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, ARB staff require Agricultural Assistance Program projects to meet a "cost-effectiveness of total reductions" criterion. The cost-effectiveness of total reductions is determined by subtracting the emissions of the new engine from the emissions of the old engine. 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:

$$\frac{\text{Annualized Cost (\$/year)}}{\text{Weighted Emission Reductions if no Regulatory Requirement Existed (tons/yr)}}$$

For example, the cost-effectiveness of total reductions calculations 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 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.

As described in the proposed 2008 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:

$$\underline{\text{Weighted Total Emission Reductions}} = \text{NOx reductions (tons/yr)} + \text{ROG reductions (tons/yr)} + 20*[\text{combustion PM reductions (tons/yr)}]$$

The annual emission reductions for each pollutant (NOx, ROG, and combustion 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 Proposed 2008 Carl Moyer Program Guidelines.

The emission standards and load factors for off-road diesel engines and large SI engines in Appendix B of the proposed 2008 Carl Moyer Program Guidelines must be used for these calculations. The default energy consumption factor for a stationary agricultural irrigation pump engine greater than 50 hp is 17.56 bhp-hr/gal.

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 formula for calculating annualized cost is provided in Appendix C of the proposed 2008 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 (Agricultural Sources) of the proposed 2008 Carl Moyer Program Guidelines.

General examples of calculating the cost-effectiveness of projects are provided in Appendix C of the proposed 2008 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.

V. Minimum Project Application Requirements

Districts must ensure project applications include the specific information needed to determine project eligibility and populate the Carl Moyer Reporting Log, including the information needed to track the project and calculate the cost-effectiveness of total reductions.

VI. Definitions

Confined Animal Facility (CAF): A large confined animal facility shall mean:
(a) In any area designated as a federal ozone nonattainment area as of January 1, 2004, any confined animal facility that maintains on any one day: (1) 1,000 or more milk-producing dairy cows; (2) 3,500 or more beef cattle; (3) 7,500 or more calves, heifers, or other cattle; (4) 100,000 or more turkeys; (5) 650,000 or more chickens other than laying hens; (6) 650,000 or more laying hens; (7) 3,000 or more swine; (8) 15,000 or more sheep, lambs, or goats; (9) 2,500 or more horses; (10) 650,000 or more ducks; or (11) 30,000 or more rabbits or other animals.
(b) In any area other than an area described in subsection (a) above, any confined animal facility that maintains on any one day: (1) 2,000 or more milk-producing dairy cows; (2) 7,000 or more beef cattle; (3) 15,000 or more calves, heifers, or other cattle; (4) 200,000 or more turkeys; (5) 1,300,000 or more chickens other than laying hens; (6) 1,300,000 or more laying hens; (7) 6,000 or more swine; (8) 30,000 or more sheep, lambs, or goats; (9) 5,000 or more horses; (10) 1,300,000 or more ducks; or (11) 60,000 or more rabbits or other animals.