

# 2008 Carl Moyer Program Guideline Revisions

## Draft Project Criteria for Discussion at the November 7, 2007 Carl Moyer Program Workshop

This document contains ARB staff's draft project criteria for the 2008 revisions to the Carl Moyer Program Guidelines. The project criteria specify the minimum requirements for each source category fundable under the Carl Moyer Program. These draft project criteria will be discussed at a public workshop in Sacramento on November 7, 2007.

Based on the comments received during or after the workshop, ARB staff will refine the criteria and prepare the proposed Carl Moyer Program Guidelines. The Guidelines will include background information, program administration requirements, descriptions of applicable regulatory requirements, a discussion of the interaction between the Carl Moyer Program and the Goods Movement Emission Reduction Program funded under Proposition 1B, sample calculations, as well as the project criteria. One of the goals for the revised Guidelines is ensuring that the Carl Moyer Program and the Goods Movement Emission Reduction Program complement one another. Because the Goods Movement Program requirements are also under development, further changes to the Carl Moyer project criteria may be proposed to align the two programs.

The proposed Guidelines will be released for public comment in early February 2008. The Board is scheduled to consider the proposed Guidelines at its March 27, 2008 meeting.

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## **General Project Criteria**

These proposed criteria represent a consolidation of the general criteria from each source category chapter and program criteria from the minimum contract requirements section of the Program Administration Chapter in the 2005 Guidelines. These criteria apply to all Carl Moyer Program projects. They include the requirements for surplus reductions, cost-effectiveness requirements, minimum project life, engine destruction requirements, and provisions for case-by-case approval of projects that fall outside of the project criteria.

- 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.
- The local air district or ARB Governing Board rule adoption 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, or that project must achieve emission reductions surplus to the new rule.
- 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.
- No project funded by the Carl Moyer Program shall be used for credit under any federal or state emission averaging banking and trading program.
- Engines operating under a regulatory compliance extension granted by the ARB, a local district, or the U.S. EPA are not eligible for funding.
- Projects funded by the Carl Moyer Program may not be used to generate a compliance extension or extra credit for determining regulatory compliance.
- Projects must meet a cost-effectiveness of \$16,000 per weighed ton of NO<sub>x</sub> + ROG + PM<sub>10</sub> reduced calculated in accordance with the cost-effectiveness methodology in Appendix C. All state funds plus any other under a district's budget authority or fiduciary control contributed toward a project must be included in the cost-effectiveness calculation.
- 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. 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.

- 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.
- The default project life does not consider upcoming regulatory requirements. Project life may be shorter due to regulatory requirements.
- The contract term must extend to the end of the project life.
- The new engine/vehicle/equipment must remain in service for the project life.
- Funded projects must have at least 75 percent of their total activity in California. (Requirement does not apply to marine projects).
- Potential projects that fall outside of these criteria may be approved by the ARB on a case-by-case basis if both of the following occur:
  - Evidence provided to the air district suggests potential surplus, real, quantifiable and enforceable emission reduction benefits.
  - The air districts must consult with ARB staff to determine eligibility of all projects considered for funding on case-by-case basis. All projects considered on a case-by-case basis must receive ARB approval in writing prior to contract execution.
- A potential grantee may not order or make a down payment on a new engine, piece of equipment, or vehicle prior to district approval of the project, either via contract execution or approval by the governing board or board designee. Dealers ordering engines, equipment, or vehicles prior to district approval of grant applications assume all financial risk, and are in no way ensured program funds, for such technology. A grantee may not receive engines, equipment, or vehicles until the project contract is executed.
- The existing (old) engine must be destroyed and rendered useless.
  - The destruction of the engine must be documented by district staff verifying the engine serial number matches that on the project contract either in-person or through photographic or video evidence.
  - Engines without a visible and legible serial number are only eligible to be repowered if district staff stamps the engine block with the Carl Moyer Program project number (or uses alternative permanent marking) when the engine is in the project vehicle or equipment.
  - Methodology for verifying engine destruction must be identified in the district's Policies and Procedures Manual. ARB approval of the Policies and Procedures

Manual shall indicate ARB approval of the district's methodology for verifying engine destruction.

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



## On-Road Heavy Duty Vehicles

Summary of changes to the on-road heavy-duty project criteria:

Draft On-Road Heavy-Duty Vehicle Criteria Disclaimer: ARB is committed to ensuring that the Carl Moyer Program and the Proposition 1B: Goods Movement Emission Reduction Bond Program are complementary and do not compete for projects. However, numerous details still need to be resolved. As a result, project criteria, maximum eligible funding, and timing for funding availability could all be impacted for some goods movement project categories. For example, the *Goods Movement Emission Reduction Program: Staff Draft Concepts for Implementation* document (found at [www.arb.ca.gov/gmbond](http://www.arb.ca.gov/gmbond)) includes a proposal that an ARB-verified retrofit device could be eligible for up to \$5,000 in incentive funding per device while the Carl Moyer Program currently allows up to the full cost of the retrofit. ARB welcomes comments regarding how criteria and funding amounts for projects eligible for both the Carl Moyer Program and the Proposition 1B Program could be aligned to maximize the programs' efficiency and effectiveness.

Eligible Project Cost: Allow Moyer to pay up to the following percentage of the total project costs for on-road projects:

- New vehicle purchase – 25%
- Vehicle repower – 80%

Reflash: Require all reflashable engines in a fleet be reflashed before any specific fleet's project is approved.

Remanufactured Engines: Require documentation that remanufactured engine's serial number matches an EO and provide a copy of that EO with application.

MY 2010 Engines: Clarify the process for funding projects when the model year 2010 0.2 g/bhp-hr NOx engines are introduced:

- Contracts must be fully executed by 12/31/09
- Vehicles must be in service by 6/30/2010

Repower Requirements: To be consistent with the upcoming Private Fleet rule, require repower replacement engines to meet at least the model year 2007 1.2 g/bhp-hr NOx and 0.01 g/bhp-hr PM emissions standards.

Repowers with FEL Engines: Require that engines be certified to 1.2 g/bhp-hr NOx or lower. However, for cost-effective calculations the applicable 2006 emission factor must be used.

Fuel Usage in Cost-Effective Calculations: Only allow fuel based calculations if documentation of previous fuel use and mileage records show the project to be at least 30% more cost-effective when using fuel based calculations. Usage must be based on two years of historical, vehicle specific, usage documentation.

## 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 the project application, contract, reporting, and other requirements as described program administration chapter. Participating districts retain the authority to impose additional requirements in order to address local concerns.

### A. General

- Default project life for on-road projects are as follows:

Buses $\geq$ 33,000 GVWR - New	12 years
Other On-road - New	10 years
Repower Only (No Retrofit)	7 Years
Repowers + Retrofits	5 years
Retrofits	5 years

The default project life does not consider upcoming regulatory requirements. Project life may be shorter due to regulatory requirements.

- 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.
- 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.
- 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>.
- 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.

- 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.
- 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.
- 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.
- The energy consumption factor to be used for all on-road fuel based calculations is 18.5 bhp/hr-gal.

## **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. The process for completing the compliance check is as follows:

- 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.
- 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.
- 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.

- 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.

### **C. New Purchase**

The following criteria apply to all on-road new vehicle purchases

- From 2008 to 2009, the purchase of a new vehicle is eligible for funding if the engine is certified to 0.84 g/bhp-hr NOx emission limit or lower.
- 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.
- Fleets/agencies affected by upcoming fleet regulations may use Carl Moyer Program funding to purchase a new vehicle if the project life expires prior to the final compliance date or achieves reductions beyond regulatory requirements. See applicable criteria below for each fleet regulation.
- The Heavy-Duty Diesel-Engine and Vehicle Standard will be used as the baseline for determining eligibility for the purchase of a new on-road vehicle. Engines and vehicles certified to the Heavy-Duty Otto-Cycle Engine Standard may be eligible if certified to a level 30 percent less than the current diesel standard.
- New hybrid electric vehicle (HEV) purchases will be considered on a case-by-case basis if the hybrid drive system is certified to lower than the current NOx and PM standards.
- Engines used in any ABT program, such as FEL engines, are not eligible for new vehicle funding.

### **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. 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.

- Replacement engines for repower projects must be an ARB certified engine meeting at least the Model Year 2007 1.2 g/bhp-hr NOx and 0.01 g/bhp-hr PM emissions standards.

- Engines that are certified to a FEL NO<sub>x</sub> or NO<sub>x</sub> + NMHC level that is equal to or lower than 1.2 g/bhp-hr NO<sub>x</sub> are eligible for use in vehicle repower projects. However, for cost-effective calculations, the applicable 2006 emission factor must be used.
- To claim NO<sub>x</sub> reductions from a repower project, NO<sub>x</sub> emissions must be certified by ARB to a NO<sub>x</sub> reduction level of at least 15 percent from the baseline engine.
- Fleets/agencies affected by upcoming fleet regulations may be able to use Carl Moyer Program funding for repower 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.
- All engines replaced as part of an on-road repower project must be scrapped, consistent with the requirements of Program Administration Chapter.
- Mechanical-to-electronic engine repower projects will be considered by ARB on a case-by-case basis.
- Funding requests for other related repowering equipment, such as the vehicle transmission, will be considered on a case-by-case basis, based upon whether it is a necessary expense. Districts may also choose not to pay for any additional expenses.
- The replacement engine used in vehicle repower projects may be a new, rebuilt, or a remanufactured engine. Rebuild 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).
- Funding is not available for projects to replace spark-ignition engines (i.e., natural gas or gasoline, etc.) with diesel engines.

#### **E. Retrofit**

Retrofit refers to modifications made to an engine and/or fuel system such that the specifications of the retrofitted engine are not the same as the original engine. 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>.

- Only ARB-verified retrofits are eligible for funding.

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

- Carl Moyer Program funds can not 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. Glider Kits**

- An engine repower for a glider kit (replacement cab and chassis) is eligible for funding. The replacement engine must be newer than the glider kit and meet the general program criteria above.
- Glider kits are not an eligible expense under the Carl Moyer Program.

## **H. Private Fleets**

- 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 the project criteria for in-use heavy-duty diesel-fueled vehicle projects.

## **I. Public and Utility Fleets**

- Projects are subject to the general program criteria listed above.
- All public and utility vehicle projects must submit 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.
- Due to low mileage, public and utility vehicle projects are generally only eligible for small grant amounts.
- 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.
- Low-Population County fleets (counties with a population of less than 125,000) 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.
- NO<sub>x</sub> reductions may be available for funding in retrofit projects, repower projects, and new purchases.

- 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/XXX>. [to be added]
- For more information on public fleet regulatory requirements for this source category, please see <http://www.arb.ca.gov/msprog/publicfleets/publicfleets.htm>.

#### **J. School Buses**

- Projects are subject to the general program criteria listed above.
- 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 minimum grant amounts.
- School bus calculations shall use the MHD vehicle emission factors and conversion factors to calculate cost-effectiveness.

#### **K. Solid Waste Collection Vehicles**

- Projects are subject to the general program criteria listed above.
- 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.
- 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.
- NOx reductions may be available for funding in retrofit projects, repower projects, and new purchases.
- For more information on the regulatory requirements for SWCVs, including those for record keeping, please see <http://www.arb.ca.gov/msprog/swcv/swcv.htm>.

#### **L. Transit Vehicles (Urban Buses and Transit Fleet Vehicles)**

- Projects are subject to the general program criteria listed above.
- 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.

- Transit Fleet Vehicles:
  - The Fleet Rule for Transit Agencies specifies compliance dates for those fleets established before January 1, 2007 and for those established after January 1, 2007. 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.
- Urban Buses:
  - The Fleet Rule for Transit Agencies specifies compliance dates for those urban bus 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. These projects may have the default project life.
  - For new urban bus vehicle projects, the incremental cost not funded by the Federal Transit Administration (FTA) is eligible for and may be granted funding under the Carl Moyer Program.
- 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.
- 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/XXX>. [to be added]
- For more information on the regulatory requirements for transit agencies, please see the <http://www.arb.ca.gov/msprog/bus/frmlregdocuments.htm>.

#### **M. Idling Reduction**

- Projects are subject to the general program criteria listed above.
- Heavy-duty trucks with the primary engine model year 2006 and older are eligible for ARB verified retrofit APU funding.
- Retrofit projects that control PM must use the highest level technically feasible technology available for the APU.

- 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.
- 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.
- 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.
- The installation of electric power infrastructure at truck stops and distribution centers is eligible for funding through air districts' Carl Moyer Program match funds.
- 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.
- Other idle reducing projects may be considered on a case-by-case basis.

#### **N. Transport Refrigeration Units (TRU)**

- Projects are subject to the general program criteria listed above.
- 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.
- 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.
- Funding opportunities may exist for a zero emission new purchases or repowers on a case-by-case basis.
- 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 [www.arb.ca.gov/moyer/XXX](http://www.arb.ca.gov/moyer/XXX). [to be added]

## On-Road Heavy-Duty Fleet Modernization

Summary of changes to the on-road heavy-duty fleet modernization project criteria:

Draft On-Road Heavy-Duty Fleet Modernization Criteria Disclaimer: ARB is committed to ensuring that the Carl Moyer Program and the Proposition 1B: Goods Movement Emission Reduction Bond Program are complementary and do not compete for projects. However, numerous details still need to be resolved. As a result, project criteria, maximum eligible funding, and timing for funding availability could all be impacted for some goods movement project categories. For example, the *Goods Movement Emission Reduction Program: Staff Draft Concepts for Implementation* document (found at [www.arb.ca.gov/gmbond](http://www.arb.ca.gov/gmbond)) includes a proposal to replace a pre-2003 model year truck with a truck meeting 2007 model year emission standards could receive a maximum of \$20,000 - \$50,000 in incentive funding, while the Carl Moyer Program currently could pay for up to 80 percent of a new truck. ARB welcomes comments regarding how criteria and funding amounts for projects eligible for both these programs could be aligned to maximize the programs' efficiency and effectiveness.

Replacement Vehicle Requirements: New vehicle must meet 2007 MY emission standards.

Payment Schedule Provision: District is allowed to make full payment to the dealer at the time the dealer delivers the new vehicle to the applicant. The specific requirements relating to this provision is described in Section E of the proposed project criteria.

Regional Fleet Modernization Program: Currently, each district must submit its own fleet modernization program for ARB approval and, if approved, implement its own fleet modernization program. In addition, participating air districts are currently allowed to fund multi-district projects. The proposed provision, described in Section A, will specifically allow air districts to share resources and operate a single regional fleet modernization program.

Removing Tiered Transaction Provisions: The tiered transaction has not worked as intended as a source category and is being deleted. Staff plans to investigate additional options to expand the fleet modernization program in light of new proposed on-road rules.

Truck Leasing Concept: No specific proposal at this time.

## **Project Criteria**

Participating districts retain the authority to impose additional requirements in order to address local concerns.

### **A. General Criteria**

- 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.
- In funding fleet modernization projects, the replacement vehicle must reduce NOx emissions by at least 15 percent from the old vehicle emissions.
- 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 in targeted vocation categories.
- On-road diesel-fueled heavy-duty drayage trucks are eligible only on a case-by-case basis.
- Vehicles equipped with glider kits are eligible to participate in the fleet modernization category; this applies only to the old vehicles. Replacement vehicles cannot be glider kits. 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.
- The low emissions technology must be certified and meet the current NOx, PM and/or ROG requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.

### **B. Participant Requirements**

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

- 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 project life is three years.
- 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.
- The old vehicle must have both engine and chassis of model year 1990 or older.
- The old vehicle must have been registered in California for the previous two years.
- The old vehicle 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.
  - Other methods as approved by ARB.
- The participant must currently own and operate the old vehicle. If it is unclear whether a vehicle is owned or leased by a participant, the district will determine whether the vehicle is eligible.
- 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.
- The participant must maintain replacement value insurance coverage for the project life.
- The participant must be in compliance with air quality laws; all outstanding citations must be paid up.

- If the requested fleet modernization project is approved for funding, the participant must re-flash all remaining trucks in the fleet that are eligible to have Low NOx Software installed, if any, and that are not part of the approved fleet modernization project, prior to receiving funding.

### **C. Replacement Vehicle Requirements**

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

- **Model Year:** The replacement vehicle must be a 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.
- 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 emissions calculation purposes, vehicles with a NOx or NOx+NMHC FEL level of 1.2 g/bhp-hr or lower must use the NOx and ROG emission factors for 2006 model year vehicles. For PM emissions, use the PM emission factor for 2007 MY and later.
- 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.
- The annual mileage of the replacement vehicle must not exceed 150 percent of the baseline project mileage, except as approved by the district and ARB.
- **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.
  - 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.
  - 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:

$$\text{(Old Engine Horsepower)} \times (1.20) = \text{Maximum New Engine Horsepower}$$

(Example: 300 HP x 1.20 = 360 HP)

- In limited situations, the district may approve a greater than 20 percent increase in horsepower.
- **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.
- **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.
- **Warranty Requirements:** 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.
- **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. An EMU is required on all replacement vehicles.
  - 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.
  - 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.
  - EMU data must be reported to the district for the project life.
  - If the EMU is not functioning properly as indicted by the district, the participant will submit mileage reports as specified the district.
  - Upon approval of the ARB, the district may waive the requirement for installation of an EMU.

- 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.

#### **D. Tiered Transactions**

The tiered transaction has not worked as intended as a source category and is being deleted. Staff plans to investigate additional options to expand the fleet modernization program in light of new proposed on-road rules.

#### **E. Determining Awards**

Grant award determinations must be made with the following considerations:

- Funding awards are based on the average miles per year driven during the previous two years. Fleet averages can not be used. Participants must submit conclusive documentation of mileage including logbooks, fuel records, and maintenance records maintained for individual vehicles.
- 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.
- 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.
- The maximum reimbursement for all awards will be the lesser of either: (a) 50 percent of the used truck value or 50 percent of the invoiced price of a new truck (this value is consistent with the Proposition 1B funding), 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.
- If suitable equipment is available and deemed cost-effective by the district, the full cost of the EMU (including warranty, data retrieval, compilation, and transmission to the district, and the installation cost) is eligible for Carl Moyer Program funding.
- 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

- 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.
- The participant may obtain financing to assist in the purchase of a replacement vehicle.



## **Light-Duty Vehicles**

ARB adopted a major revision to Carl Moyer Program guidelines for light-duty vehicles in December 2006. Minor changes are proposed for the 2008 Guidelines:

Changes to Emission Calculations for Scrap Programs: new definition of “fleet average” replacement vehicle; simplify calculation of second and third year credit for high emitter scrap programs; updated emission factors using EMFAC2007.

Reorganized Text to Clarify and Consolidate Responsibilities.

### **Project Criteria**

These criteria provide the minimum requirements for Carl Moyer Program light-duty vehicle projects. Light-duty vehicle projects must also conform to project application, contract, reporting, other administrative requirements, and general criteria as described in Part I, Chapter 2 of these Guidelines. Participating districts retain the authority to impose additional or more restrictive requirements to address local concerns.

#### **A. Vehicle Eligibility Requirements**

- Participation shall be entirely voluntary for vehicle owners.
- The vehicle must be a gasoline-powered passenger car or light-duty truck up to 8,500 pounds gross vehicle weight.
- 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.
- 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.
- 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.
- 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.

- Vehicles whose emission control systems have been tampered with, as defined in Title 16 California Code of Regulations, Division 33, Chapter 1, Article 5.5, section 3340.41.5, are not eligible until such tampering has been completely corrected.
- 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.
- For high emitting vehicle projects, the vehicle must receive a confirmatory Smog Check test to establish its baseline emissions and must exceed the pass/fail emission standard for the model year and vehicle class as defined in Title 16, Division 33, Chapter 1, Article 5.5, Section 3340.42 of the California Code of Regulations, as listed on BAR's web site at:  
[http://www.smogcheck.ca.gov/ftp/pdfdocs/asm\\_ph43.pdf](http://www.smogcheck.ca.gov/ftp/pdfdocs/asm_ph43.pdf).
  - Vehicles not testable under the ASM Smog Check test may be given a Two Speed Idle Smog Check test to determine eligibility and estimate hydrocarbon emissions.
  - If a vehicle's emissions are below the ASM pass/fail emission standards, the vehicle is not a high emitter and does not qualify for high emitter projects but may be retired for default emission reductions through a conventional VAVR project.
  - For pre-1974 model years, the pass/fail emission standards for the 1974 model may be used to qualifying vehicles for the project.
  - Smog Check tests must be full and not a "fast pass" tests conducted by BAR-licensed technicians, conducted according to BAR regulations and procedures, and completed as close to the retirement or repair time as reasonably possible.

### **1. VAVR Only Vehicle Requirements**

- The vehicle to be retired shall not be operating under a Smog Check repair cost waiver or economic hardship extension.
- High emitter VAVR programs allowing Low Emission Vehicles (LEVs) replacement vehicles, shall estimate LEV emission rates using Smog Check test results completed within thirty (30) days of the purchase of the LEV.
- 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.

- 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.
- The vehicle shall pass functional and equipment eligibility inspections as specified in the ARB's VAVR regulation.

## **2. VRV Only Vehicle Requirements**

- All repairs must be completed at least 91 days prior to the vehicle's next biennial Smog Check test.
- Vehicles covered under their manufacturer's warranty period are not eligible. Warranty requirements are found in Title 13 California Code of Regulations, Division 3, Chapter 1, Article 6, section 2035 et seq. and Article 1, section 1961.
- Vehicles registered to non-profit organizations, fleets, or businesses are not eligible.
- A vehicle may only be repaired once in its lifetime through a VRV project.

### **B. Additional VRV Project Requirements**

- Only emission-related repairs are fundable through a VRV project.
- 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.
- 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.
- 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.
- 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.
- 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 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.
- 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.
- 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.
- 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.
  - An example of a standardized diagnostic form is provided in Figure X(to be inserted). Other tests may be required to completely diagnose emission failures.
- 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.
- 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.
- 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.

### **C. Emissions Measured by the Two Speed Idle Test**

Emission rates of certain high emitting 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 Two Speed Idle (TSI) test may be used. The TSI test must be performed in strict compliance with BAR protocols and the emission rate calculation methodology described in "Techniques for Estimating IM240

and FTP Emission Rates from Two-Speed Idle Emissions Concentrations”, May 10, 2001, Technical Notes, Bureau of Automotive Repair.

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.

#### **D. District Project Plan Requirements**

- 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.

##### **1. General Requirements**

- The name, title, and telephone number of the district project contact.
- An evaluation of environmental justice considerations including, but not limited to, outreach addressing community needs.
- 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.
- Copies of contracts with VAVR enterprise operations, repair stations, consultants, and any other contractor(s) participating in the project.
- A description of and timetable for monitoring and auditing enterprise operations, repair stations, consultants, and other contractors.
- A copy of the statement of certification that a VAVR enterprise operator has demonstrated compliance with all applicable provisions of the VAVR regulation.
- 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.
- A sample of the records that will be required of the VAVR enterprise operator and/or repair stations.
- A description of project elements stricter than the ARB minimum requirements.

## **2 Additional High Emitter Project Plan Requirements**

- 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.
- 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.
- A detailed description of the methodology used to calculate extra emission reductions, including changes to the ARB-recommended method.
- 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.
- If a district intends to include a PM measuring element, the plan must specify the test equipment and include a copy of the test protocol.
- 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)
- 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.

### **E. Recordkeeping and Reporting**

- For each vehicle retired or repaired, the district shall retain the following records for inclusion in the annual report to the ARB. Districts and enterprise operators shall retain these records for the life of the project plus an additional 3 years.

#### **1. General Requirements**

1. Vehicle Identification Number and License Plate Number.
2. Vehicle odometer reading.
3. Vehicle make and model.
4. Name, address, and phone number of legal vehicle owner(s).
5. Name and business address of the VAVR enterprise operator or repair business.
6. Emission reductions claimed.
7. Total district cost to retire or repair each vehicle.
8. Date of vehicle purchase and retirement by the enterprise operator. [VAVR only]
9. Date of repair and amount paid for and nature of each repair. [VRV only]
10. Pre and post-repair Smog Check test results. [VRV only]

11. 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]
12. Due date of next biennial Smog Check test. [VRV only]

## **2. Additional VAVR Recordkeeping Requirements**

The enterprise operator shall maintain the following records. These records are not required for the annual report but must be made available to the ARB for review.

1. Reproduction of California Certificate of Title and registration, as signed-off by the seller at time of final sale to the VAVR enterprise.
2. Reproduction of the applicable certificate of functional and equipment eligibility.
3. Reproduction of the applicable Notice to Dismantler (DMV Registration 42 form).
4. Reproduction of written documentation from the DMV verifying that a vehicle meets the vehicle registration requirements of the ARB's VAVR regulations.
5. 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.

### **F. Minimum Project Application Requirements**

- Districts must ensure project applications include the specific information needed to populate the Carl Moyer Program's Clean Air Reporting Log (CARL). This information reflects the minimum data needed to track the project and calculate project cost-effectiveness.

### **G. Offering Vehicles/Parts to the Public (VAVR only)**

- 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.
- 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.
- 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.
- 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.



## Off-Road Equipment Replacement

**Note for Reviewers:** This preliminary draft language includes commentary that describes the intent of some paragraphs. This commentary, noted in *italics*, is a guide for reviewers and will be removed in later drafts. Language should reflect general consensus from fleet surveys and Work Group meetings to date.

### Program Overview

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 will provide real emission benefits by retiring the high polluting equipment earlier than would have been expected through normal attrition. 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 other, the diminished value of the old equipment may not justify investing significant funds for engine replacement. ARB's intent is to design this program in such a way that it does not pay for equipment replacement that would have occurred anyway, but is accessible for accelerated turnover of old equipment.

#### A. General Criteria

- Off-road equipment replacement projects are eligible for up to a maximum of **50-80** percent of the total equipment purchase costs (minus any repairs needed on used equipment) up to the cost-effectiveness limit. Retrofits are eligible for up to 100 percent of total costs, including all filters and maintenance of the filters needed during the project life, up to the cost-effectiveness limit.  
*Staff is looking for comments on potential maximum funding amounts. Note that projects are subject to the Moyer cost-effectiveness cap (currently proposed at \$16,000 per weighted ton of reductions).*
- The maximum project life can be found in Table XXX.  
*Staff is currently working on determining appropriate project lives for equipment. Project life is based on the remaining useful life of the old equipment.*
- Funding is available for equipment utilizing the following engines:
  - 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.
  - Diesel engines larger than or equal to 25 horsepower.
- The low emissions technology must be ARB certified or verified and meet the current NOx, PM and/or ROG requirements. For the purposes of the Carl Moyer Program, a

technology granted a conditional certification/verification by ARB is considered certified/verified.

- Equipment must be maintained in accordance with manufacturer specifications.

### **B. Existing (Old) Equipment Requirements**

*The following criteria are the draft minimum criteria for the old equipment that will be replaced. These criteria were developed to ensure that the equipment resides and is being used in California and is a functioning piece of equipment.*

- Equipment from any vocation or fleet size are eligible for funding provided the participant submits conclusive documentation as detailed below.
- The old equipment must have an uncontrolled engine.  
*Uncontrolled engines are those that were manufactured prior to engines standard regulations. For diesel engines these are pre-Tier 1 engines, for LSI engines, these are pre-2002 model year for less than 1 liter engines and pre-2001 model year for greater than 1 liter engines.*
- *This bullet is to provide evidence of extended residency and use in California. Some of this documentation, such as fuel records, may also be used for evidence of usage for cost-effectiveness calculations (fifth bullet in this section). Staff realizes that this redundancy may be confusing and is looking for input on clarifying the bullets.*  
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:
  - 1) Bill of sale for the old equipment and
  - 2) Two years of documentation for at least one item in the following list. If a bill of sale can not be provided, two items from the following list may be submitted in substitution:
    - Tax depreciation logs
    - Property tax records
    - Equipment insurance records
    - Bank appraisals for equipment
    - Maintenance/service records
    - General ledgers
    - Fuel records specific to the old equipment (To be used as evidence of California residency the fuel records must also identify the equipment owner.)
    - Other documentation approved by ARB.
- 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:
  - Maintenance/service records

- Revenue and usage records that identify operational, standby, and down hours for the equipment
- Routine inspections which document the operating condition of the old equipment (OSHA or workplace required)
- 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.

- *This documentation requirement is designed to provide evidence of usage for cost effectiveness calculations. After discussions with stakeholders, staff is also considering a possible option of having default usage values for fleets that are unable to provide adequate documentation. Determining the proper default values may be difficult because they can vary depending upon equipment utilization.* Participants must submit documentation of annual usage of the old equipment for the previous two years. The participant must be able to provide documentation of at least one of the following:
  - 1) 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
  - 2) At least two items from the following list proving old equipment is being used by the fleet:
    - Revenue and usage records that identify operational, standby, and down hours for the equipment
    - Employee timesheets linked to specific equipment use
    - Preventative maintenance records tied to specific hours of equipment use
    - Repair work orders specific to the equipment
    - Six months of tracking normal equipment usage with a functional, tamper proof hour meter with prior district approval
    - Other documentation approved by ARB.
- 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 added. For the replacement equipment cost-effectiveness calculation, the usage of the two pieces of old equipment is added for the replacement equipment usage.

### **C. Replacement Equipment Requirements**

*The following criteria are the draft minimum criteria for the new equipment that is being purchased. These criteria were developed to ensure that the new equipment is the*

*cleanest available equipment and will comply with current and future regulatory requirements.*

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

- The new or used replacement equipment must have an engine meeting the current Model Year California emission standard. If a specific piece of equipment can not be purchased with an engine meeting the current 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 that equipment with an engine meeting the current Model Year emission standard is unavailable must be provided to the district.
  - For diesel equipment, engines participating in the ABT program that are certified to FELs higher than the applicable emission standards, as designated on the Executive Order, are ineligible to participate in the Carl Moyer Program.
  - 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 certification emission standard and/or Tier designation for the engine must be determined from the Executive Order issued for that engine, not by the equipment/engine model year. Executive Orders for off-road engines may be found at <http://www.arb.ca.gov/msprog/offroad/cert/cert.php>
- The replacement equipment must execute the same job as the old equipment (i.e. replacement of an agricultural tractor with another agricultural tractor).
- 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, the district may approve a greater than 25 percent increase in horsepower. Documentation must be provided that the new equipment will be executing the same job as the old equipment and either like equipment in the original horsepower range was not available or the higher horsepower equipment will result in equal or less annual emissions than the new equipment in the original horsepower range.
- Purchasers of new diesel equipment must purchase a minimum of a three-year or 5000 hours power and drive train warranty for the replacement equipment. Purchasers of new large spark-ignited equipment must purchase a minimum of a one-year or 2000 hours power and drive train warranty for the replacement equipment. (*The warranty requirements between diesel vs. LSI are split because LSI typically doesn't offer a longer standard warranty for new 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. No Carl Moyer Program 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. Warranty documentation must be provided to the district. Warranty costs are not eligible for funding.

- The participant must maintain replacement value insurance coverage for the project life. Documentation of insurance must be provided to the district. In the event that equipment needs to be replaced under this provision, the new equipment must meet, at a minimum, the emission standards of the equipment under contract. Insurance costs are not eligible for funding.
- The participant may obtain financing to assist in the purchase of replacement equipment. Documentation of financing must be provided to the district.
- Future annual hours of equipment operation for determining emission reductions must be based only on readings from an installed and fully operational hour-meter. Future annual fuel usage for determining emission reductions must be based on fuel logs, purchase receipts or ledger entries specific to the funded equipment.
- A functioning hour meter, or other approved usage monitoring device, must be maintained on all equipment for projects that document hours of operation as means of calculating emission reductions and cost-effectiveness.
- ARB Verified Diesel Emission Control System (or retrofit): An ARB-verified retrofit is required on all replacement equipment.
  - 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.
  - Retrofit projects that control PM must use the highest level ARB-verified technology available at obligation of funds 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.
  - 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.
  - Data-logging may be conducted on the old equipment to determine the proper retrofit device needed for the replacement equipment. Data-logging may be paid for with incentive funding, if it meets the cost effectiveness limit.

- 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>.

#### **D. Existing Equipment Destruction Requirements**

*Consistent with other Carl Moyer Program category requirements, in order to be eligible for Carl Moyer funding the old engine/equipment must be destroyed. The following criteria are the draft minimum criteria for the destruction of the old equipment. Staff is looking into providing district flexibility on the timing of equipment destruction and what, if any, parts may be salvaged from equipment.*

- The old equipment must be destroyed within 90 days of being replaced. The old equipment needs to be destroyed or rendered useless by punching a hole in the engine block 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.
- Destruction of the equipment may occur either at a district approved salvage yard or another facility in conjunction with a district salvage inspection.
- If districts use a district approved salvage yard, the following conditions must be met:
  - Certify that the old equipment will be delivered to a qualified salvage yard within 30 days of receipt of the new equipment.
  - 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.
  - It is the district's responsibility to ensure that the salvage actually occurs and to obtain the completed Certificate of Equipment Destruction or other similar documentation.

#### **E. District Administrative Requirements**

Districts must establish off-road equipment replacement policies and guidelines before they can fund off-road equipment replacement projects. This includes agreements with local dealerships and salvage yards, reimbursement procedures, the development of contracts, etc. The ARB must approve district off-road equipment replacement policies and guidelines 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 policies and guidelines. The policies and guidelines must identify the district's process for oversight and review of dealer identified tasks. The district's off-road equipment replacement guidelines must address all of the above criteria as well as the following:

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

- Incentive funding can only be used to pay for items essential to the operation of the equipment.
- 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.*
- Districts are responsible for completing a pre-inspection on the old equipment, a post-inspection on the new 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.
  - 1) Pre-inspection must verify the operational condition of the old equipment. The pre-inspection should verify, at a minimum, the following items:
    - Tires in usable condition (able to hold air, sufficient tread or tracks, etc.)
    - Steering wheel operational
    - Equipment able to start up and move backwards and forwards
    - Buckets, blades, rollers, etc. are working
    - Undercarriage structurally sound
    - Fuel tank in usable condition
    - No parts stripped
    - Equipment not vandalized.

Clear photographs of the old equipment must include the following views:

- Right Side - hood down.
  - Front - hood down.
  - Left Side - hood down.
  - Equipment serial number
  - Engine - left side.
  - Engine - right side.
  - Engine Serial Number - either tag or stamp on block.
  - Equipment ID, if available.
  - Rear.
- 2) Post-inspection of the new equipment must be completed prior to disbursement of funds. The post-inspection must include clear photographs of the following views:
    - Right Side - hood down.
    - Front - hood down.
    - Left Side - hood down.
    - Equipment serial number
    - Engine - left side.
    - Engine - right side.
    - Engine Serial Number and Engine Information – tag.
    - Equipment ID, if available

- Rear.
  - Diesel Emission Control Device (if available).
  - Hour meter reading.
- 3) Salvage-inspection must be completed prior to disbursement of funds. Salvage inspection must include clear photographs of the destroyed engine block and cut frame rails. In addition, the following picture views must be taken:
- Equipment serial number
  - Engine side view.
  - Engine serial number either stamped on the block or on the tag.
  - Destroyed engine block either in-frame or out of frame as specified in the Administration Chapter of these Guidelines.
  - Cut structural components
  - Other views dependent on the method of equipment destruction

#### **F. In-Use Off-Road Diesel Vehicle Regulation**

As this regulation is structured, the vast majority of fleets will start out complying with the BACT requirements and, as they turnover and retrofit their equipment, will eventually meet and comply with fleet average targets in later years. In determining eligibility for Carl Moyer Program funding, it is assumed that all fleets are complying on the BACT path.

- Projects are subject to the general program criteria listed above.
- 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.
- Certain fleets operating in Districts that are participating in the Surplus Off-Road Opt-In for NOx (SOON) program may be required to apply for incentive funds to achieve the 2014 and 2017 fleet average targets early. Fleets should contact their local air district to determine if this program is available.
- Large Fleets  
The first compliance date for large fleets is March 1, 2010 so very limited funding opportunities exist. For example, a large fleet that requests funding for a project that will be installed and in operation by February 28, 2009, the fleet is unable to receive Carl Moyer Program funds for the equipment that would have to be in compliance with the rule by March 1, 2012 but will be able to receive funds for equipment whose compliance dates are later. To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once after July 26, 2007. Because of the high initial investment required to take advantage of the Carl Moyer Program funding, it is likely not practical for most large fleets unless the local district is participating in the SOON program.

- **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, fleets could receive incentive funds in a manner similar to the example given for large fleets. To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once after March 1, 2010.
- **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:

  1. Compliance with the PM requirement begins on March 1, 2015 and will require retrofit of up to 20 percent per year of the total horsepower in the fleet. Small fleets will be eligible for incentive funds to pay for the full cost of retrofits that are installed and in operation by February 28, 2012 subject to the cost-effectiveness cap. After March 1, 2012, fleets could receive incentive funds in a manner similar to the example given for large fleets.
  2. 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. This means that 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.
- Captive attainment areas 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 is still required but must be paid for by the fleet owner.
- For more information on eligibility for public fleet, 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/XXX>. [to be added]
- Regulatory information can be found at:  
<http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>

## **G. Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards**

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.

- Projects are subject to the general program criteria listed above.
- 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.
- For more information on eligibility for public fleet, 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/XXX>. [to be added]
- Regulatory information can be found at:  
<http://www.arb.ca.gov/msprog/offroad/cargo/cargo.htm>

## **H. 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.

- Projects are subject to the general program criteria listed above.
- 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.
- Large and Medium Forklift Fleets and Fleets of 4 or More Sweeper/Scrubbers, Ground Support Equipment, 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). To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once.

- Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer- These forklift fleets are required that 20% of their fleet complies with the regulation by January 1, 2009. The rest of the fleet must comply with the regulation by January 1, 2012. Only 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). To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once.
- Fleets with equipment not subject to the off-road LSI in-use fleet regulations are eligible for funding.
  1. Agricultural crop preparation non-forklift equipment and pre-1990 forklift
  2. Non-forklift LSI equipment such as aerial lifts, lawn & garden tractors, commercial turf equipment, mining and construction equipment, crushing and processing equipment.
  3. Small fleets (1-3 forklifts and/or 1-3 sweepers/scrubbers, airport ground support equipment, and/or industrial tow tractors).
- 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 [insert webpage here]
- Regulatory information can be found at:  
<http://www.arb.ca.gov/msprog/offroad/orspark/orspark.htm>.

#### **I. Senate Bill 467 (Lowenthal)**

Senate Bill 467 requires the ARB to establish grant criteria in the Carl Moyer Program guidelines for the replacement of off-road internal combustion equipment with specifically zero-emission equipment that can perform the same work. The equipment being replaced must be owned by the applicant, still have some remaining life, and is required to be scrapped. *ARB staff is developing specific criteria to address the requirements of SB 467 for inclusion in this program.*



## Off-Road Compression Ignition Engines

Summary of changes to the off-road compression-ignition project criteria:

Tier 1 Repowers: Tier 1 repowers ineligible for funding except for equipment that is not subject to the off-road regulation and equipment specifically exempted from the NOx requirements of the regulation.

Retrofit Requirement: Highest level verified retrofit will be required with all repowers. If the addition of the retrofit makes the project not cost effective, the retrofit is still required and the applicant is only eligible for reimbursement up to the cost effectiveness cap.

Reflect Fleet Rules: Update project eligibility requirements for equipment subject to the off-road and the cargo handling equipment regulations.

Equipment Usage: Require cost-effectiveness calculations to be based on hour-based formula. Fuel usage may be used on a case-by-case basis.

### Project Criteria

These criteria provide the minimum requirements for Carl Moyer Program off-road compression-ignition projects. Off-road compression-ignition projects must also conform to project application, contract, reporting and other administrative requirements as described in Chapter X. Participating districts retain the authority to impose additional requirements in order to address local concerns.

#### A. General

- The low emissions technology must be ARB certified or verified and meet the current NOx, PM and/or ROG requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified.
- Funding is available for engines greater than 25 horsepower.
- Engines participating in the ABT program that are certified to FELs higher than the applicable emission standards, as designated on the Executive Order, are ineligible to participate in the Carl Moyer Program.
- The certification emission standard and Tier designation for the engine must be determined from the Executive Order issued for that engine, 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>

- 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.
- Auxiliary engines on mobile equipment subject to the Portable Diesel-Fueled Engine Air Toxics Control Measure are not eligible for Carl Moyer Program funding.
- 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.
- Default project life

Off-road repower	7 years
Off-road repower and retrofit	5 years
Retrofit	5 years

Applicants must provide documentation to justify a longer project life. The default project life does not consider upcoming regulatory requirements and may be shorter.

- 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.
- 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. Alternative emission rates will be allowed with documentation from the manufacturer of the actual emission rates. Districts must retain this documentation in the project file.
- Cost-effectiveness calculations must use the hour based formula as discussed *Appendix C*. Fuel usage may 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.
- Future annual hours of equipment operation for determining emission reductions must be based only on readings from an installed and fully operational hour-meter. Future annual fuel usage for determining emission reductions must be based on fuel logs, purchase receipts or ledger entries specific to the funded equipment if case-by-case approval was provided for the project.

## B. 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. Although these are commonly diesel-to-diesel repowers, significant NO<sub>x</sub> and PM benefits are achieved due to the high emission levels of the uncontrolled engine being replaced. Funding is not available for projects where a spark-ignition engine (i.e., natural gas, gasoline, etc.) is replaced with a diesel engine.

- The percent of repower costs eligible for Carl Moyer Program funding are:
  - Tier 1 Repower – 75 percent
  - Tier 2 Repower – 80 percent
  - Tier 3 Repower – 85 percent
- For repower projects the replacement engine must be certified to a NO<sub>x</sub> 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 NO<sub>x</sub> or NO<sub>x</sub>+NMHC level that is lower than the required emission standard.
- 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.
- The replacement engine may be a new, emission-certified rebuilt, or emission-certified remanufactured engine. Eligible new engines are those offered by the original equipment manufacturer (OEM) or by a non-OEM who demonstrates to the ARB that the repower is functionally equivalent with regard to emissions, durability, and safety as described in *Appendix X*. Eligible rebuilt or remanufactured engines are those offered by the OEM or by a non-OEM who demonstrates to the ARB that the rebuilt/remanufactured engine and parts are functionally equivalent from an emissions and durability standpoint to the original engine and components being replaced as described in *Appendix X*. Rebuilt and remanufactured engines that are not re-certified to new emission standards shall use the emission standards associated with the original engine block.
- If repower 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 must meet the most current practicable previously applicable emission standard. The district shall determine eligibility of a previously applicable emission standard repower project by obtaining a current tier repower exemption using one of the two following methods:
  1. The Carl Moyer Program application may include a written statement of reason(s) from 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 details on required equipment modifications with pictures of the equipment, engineering drawings as necessary, and cost for the Tier 2/Tier 3 engine), and the proposed Tier 1/Tier 2 replacement engine. Districts must retain these exemptions in the project files.

2. The engine manufacturer may 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 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.
- Tier 1 repowers are ineligible for funding with the following exceptions:
    1. Fleets meeting the small fleet definition of the Off-Road Regulation.
    2. Fleets which are defined as captive attainment area fleets in the Off-Road Regulation.
    3. Equipment specifically exempted from the performance requirements of the Off-Road Regulation section 2449(d).
    4. Equipment that is not subject to the Off-Road Regulation.
  - Off-road engine repowers are allowed only when the highest available ARB retrofit is installed as part of the repower project.
  - If a repower project does not meet the weighted cost-effective limit due to a retrofit, then the project is only eligible for the cost up to the weighted cost-effective limit.
  - All engines replaced as part of an off-road repower project must be scrapped, consistent with the requirements of Chapter X, Section Y.

### **C. Retrofit**

Retrofit refers to modifications made to an engine and/or fuel system such that the specifications of the retrofitted engine are not the same as the original engine. Please refer to *Appendix X* 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>.

- Retrofit projects that reduce NO<sub>x</sub> emissions must be verified by ARB to a NO<sub>x</sub> reduction level of at least 15 percent.
- Retrofit projects that control PM must use the highest level technically feasible, available, and safe technology for the equipment being retrofitted. NO<sub>x</sub> is also

considered in the determination of highest level technology. 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.

- The cost of the retrofit, filters, and maintenance of the retrofit device needed during the project life may be paid for with incentive funding provided it meets the cost-effectiveness limit.

#### **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**

As this regulation is structured, the vast majority of fleets will start out complying with the BACT requirements and, as they turnover and retrofit their equipment, will eventually meet and comply with fleet average targets in later years. In determining eligibility for Carl Moyer Program funding, it is assumed that all fleets are complying on the BACT path.

- Projects are subject to the general program criteria listed above.
- 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.
- Certain fleets operating in Districts that are participating in the Surplus Off-Road Opt-In for NOx (SOON) program may be required to apply for incentive funds to achieve the 2014 and 2017 fleet average targets early. Fleets should contact their local air district to determine if this program is available.
- Large Fleets  
The first compliance date for large fleets is March 1, 2010 so very limited funding opportunities exist. For example, a large fleet that requests funding for a project that will be installed and in operation by February 28, 2009, the fleet is unable to receive Carl Moyer Program funds for the equipment that would have to be in compliance with the rule by March 1, 2012 but will be able to receive funds for equipment whose compliance dates are later. To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once after July 26, 2007. Because of the high initial investment required to take advantage of the Carl Moyer Program funding, it is likely not practical for most large fleets unless the local district is participating in the SOON program.

- **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, fleets could receive incentive funds in a manner similar to the example given for large fleets. To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once after March 1, 2010.
- **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:

  1. Compliance with the PM requirement begins on March 1, 2015 and will require retrofit of up to 20 percent per year of the total horsepower in the fleet. Small fleets will be eligible for incentive funds to pay for the full cost of retrofits that are installed and in operation by February 28, 2012 subject to the cost-effectiveness cap. After March 1, 2012, fleets could receive incentive funds in a manner similar to the example given for large fleets.
  2. 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. This means that 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.
- Captive attainment areas 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 is still required but must be paid for by the fleet owner.
- For more information on eligibility for public fleet, 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/XXX>. [to be added]
- Regulatory information can be found at:  
<http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>

#### **F. Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards**

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.

- Projects are subject to the general program criteria listed above.
- 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.
- For more information on eligibility for public fleet, 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/XXX>. [to be added]
- Regulatory information can be found at:  
<http://www.arb.ca.gov/msprog/offroad/cargo/cargo.htm>



## **Large Spark Ignition Engines**

Summary of changes to the large spark ignited engine project criteria:

LSI Fleet Rule: Updated project eligibility requirements for equipment subject to the LSI fleet rule adopted on May 12, 2007. Impacts fleets of four or more forklifts, and/or sweeper/scrubbers, industrial tow tractors, and airport ground support equipment (GSE). Limited funding opportunities for fleets subject to the rule.

Retrofit: Included criteria for retrofit projects. Default project life is three years

New Purchase: New electric vehicle purchases are eligible with a default project life of 10 years. Purchase of new zero-emission equipment other than electric and may be approved by ARB on a case by case basis. Purchase of new LSI equipment may be approved by ARB on a case by case basis.

Repower: Repowers of LSI vehicles may be approved by ARB on a case by case basis

### **Project Criteria**

These criteria provide the minimum requirements for Carl Moyer Program Large Spark Ignition projects. All projects must also conform to the general criteria, application, contract, reporting and other administrative requirements as found in Part I, Chapter 2 in these Guidelines.

#### **A. General LSI Project Criteria**

- Funding is available for LSI equipment greater than 25 horsepower.
- 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.
- Future annual hours of equipment operation for determining emission reductions must be based only on readings from an installed and fully operational hour-meter.
- Reduced-emission engines or retrofits must be certified/verified 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.
- Funding for equipment subject to the off-road LSI in-use fleet regulations may be limited. See applicable criteria for LSI in-use fleet requirements in E below.
- The following industries are not eligible for funding under this chapter: food retail stores, cold storage, and confined space operations (such as freezers).

- 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](http://www.arb.ca.gov/msprog/offroad/cert/cert.php?eng_id=LSIE)
- Default project life is shown below. Applicants must provide documentation to justify a longer project life and projects must have a minimum project life of three years. The default project life does not consider upcoming regulatory requirements and may be shorter.

New electric purchase	10 years
LSI Retrofit	3 years

## B. Retrofits

Fleets/vehicles affected by fleet regulations are eligible for new retrofit projects provided they meet the cost-effectiveness limit and if the project life expires prior to the current compliance dates. See applicable criteria discussed for LSI in-use fleet requirements in section E below.

Retrofit emission control systems entail modifications to an engine such that the retrofitted engine doesn't have the same characteristics as the original engine. The retrofit emission control systems for LSI equipment involve hardware modification to the engine, fuel system, and/or exhaust system to reduce emissions. Typically these could include changing to closed-loop electronic fuel control systems with oxygen sensors, fuel injection systems, three-way catalysts. More information on LSI retrofits, including a list of currently verified systems, may be found at:

<http://www.arb.ca.gov/msprog/offroad/orspark/verdev.htm>

**Table 1. LSI Engine Retrofit System Verification Levels**

Classification	Percentage Reduction (HC+NOx)	Absolute Emissions (HC+NOx)
<b>LSI Level 1</b> <sup>(1)</sup>	> 25%	Not Applicable
<b>LSI Level 2</b> <sup>(1)</sup>	> 75%	3.0 g/bhp-hr
<b>LSI Level 3a</b> <sup>(1)</sup>	> 85%	0.5, 1.0, 1.5, 2.0, 2.5 g/bhp-hr
<b>LSI Level 3b</b> <sup>(2)</sup>	Not Applicable	0.5, 1.0, 1.5, 2.0 g/bhp-hr

Notes: <sup>(1)</sup>Uncontrolled engines only

<sup>(2)</sup>Emission-controlled engines only

- Forklifts in Classes 4, 5, and 6 are eligible for retrofit project funding. All other LSI equipment for which there are verified retrofits systems would be eligible for funding.
- Eligible costs include purchase and installation of a verified retrofit kit and an hour meter if none exists on the equipment.

- The retrofit kit must be verified by ARB to the highest level available for the engine being retrofitted. Verification levels are listed in Table 1.

### **C. New Purchase**

- **Electric Equipment**

Electric equipment has no exhaust emissions thus providing greater beneficial emission reductions compared to internal exhaustion engine vehicles.

- Eligible new electric forklift purchases would be in Class 1, lift codes 4, 5, or 6.
- For eligible projects, applicants must sign a declaration that an old electric vehicle is not being replaced with a new electric vehicle.
- Eligible projects must include evidence of a plan to install either the number of battery chargers corresponding to the number of vehicles purchased or fast charging units for use with multiple vehicles.
- Battery chargers and necessary peripheral equipment associated with the electric vehicle may be included in determining the grant amount awarded. These are considered infrastructure and can only be paid for with district match funds.
- Fleets/vehicles affected by fleet regulations have limited opportunity for funding.. See applicable criteria for LSI in-use fleet requirements in Section E below.
- Purchase of a new zero-emission equipment other than electric may be approved by ARB on a case by case basis.

- **LSI Vehicle Purchase**

Current LSI regulations allow manufacturers to certify engines to optional standards which are below the required emission standards. New LSI engines have been certified to an optional standard as low as 0.6 g/bhp-hr.

It is likely, due to market demand driven by current regulations, that the price differential between engines certified to the standard and those certified to the optional standard will be modest and difficult to differentiate. As such, new equipment certified to the optional standard and at least 30% below the current applicable emission standard may only be approved by ARB on a case by case basis.

### **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. Due to the relative

low cost of LSI equipment, repowers are not typical. Engine repowers will be considered on case-by-case basis.

### **E. Off-Road Large Spark-Ignition Equipment Regulation**

The regulation requires reductions in fleetwide HC+NO<sub>x</sub> 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.

- Projects are subject to the general program criteria listed above.
- 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.
- Large and Medium Forklift Fleets and Fleets of 4 or More Sweeper/Scrubbers, Ground Support Equipment, 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). To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once.
- Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer-  
These forklift fleets are required that 20% of their fleet complies with the regulation by January 1, 2009. The rest of the fleet must comply with the regulation by January 1, 2012. Only 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). To ensure that projects are surplus to regulatory requirements, fleets are only eligible to receive funding once.
- Fleets with equipment not subject to the off-road LSI in-use fleet regulations are eligible for funding.
  - Agricultural crop preparation non-forklift equipment and pre-1990 forklift
  - Non-forklift LSI equipment such as aerial lifts, lawn & garden tractors, commercial turf equipment, mining and construction equipment, industrial equipment
  - Small fleets (1-3 forklifts and/or 1-3 sweepers/scrubbers, airport ground support equipment, and/or industrial tow tractors)
- 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 [insert webpage here]

## Agricultural Sources

Summary of changes to the agricultural sources project criteria:

Project life: Reduced project life implementation schedule for engines subject to the Stationary Diesel In-Use Engines ATCM.

Non-certified spark-ignited engines: Non-certified spark-ignited engines eligible on a case-by-case basis, no sunset date.

Non-engine agricultural source projects: Non-engine agricultural source projects eligible for funding on a case-by-case basis.

### Project Criteria

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

#### A. General

- The low emissions technology must be certified or verified and meet the current NO<sub>x</sub>, PM and/or ROG requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified. If the low emissions technology is not certified or verified it may be approved based on an ARB case-by-case evaluation.
- An engine must be rated at greater than 25 hp, which is equivalent to an electric motor greater than 19 kW.
- The default project life for agricultural use engine projects is as follows:

Diesel engines*	7 years
Spark-ignited engines	7 years
Electric motors	10 years

\*not subject to the Stationary Diesel In-Use Agricultural Engines ATCM

Applicants must provide documentation to justify a longer project life. The default project life does not consider upcoming regulatory requirements and may be shorter.

- Projects must have a minimum project life of three years, with the exception of engines subject to the Stationary Diesel In-Use Agricultural Engines ATCM. ARB may approve a shorter project life on a case-by-case basis. Projects with shorter lives may be subject to additional funding restrictions, such as a lower cost-effectiveness limit or a project cost cap.

- 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.
  - Variable frequency devices are eligible for funding if the applicant provides justification for adjustable water needs.
  - Reduced voltage starting (“soft start”) technology is eligible for funding if required by the electric service provider.
- District match funds may be used for infrastructure purchase and installation (e.g. line extension for electric motor projects).
- 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.
- Emission reduction calculations may be based on hours of operation or on fuel usage.
- For emission reduction calculations based on fuel usage, an energy consumption factor must be used. The default energy consumption factor for stationary agricultural use engines greater than 50 hp is 17.56 bhp-hr/gal.
- Future annual hours of engine or motor operation for determining emission reductions must be based only on readings from an installed and fully operational hour-meter. Future annual fuel usage for determining emission reductions must be based on fuel logs, purchase receipts or ledger entries specific to the funded engine.

## **B. Repower**

A repower is the replacement of the in-use engine with a new, current model year engine instead of rebuilding the existing engine to its original specifications.

- A repower of an uncontrolled or emission certified (1996+ model year) engine must be with one of the following:
  - A new electric motor.
  - A new off-road diesel engine certified to the current applicable emission standards.
  - A new off-road spark-ignited (SI) engine certified to the current applicable emission standards.
  - 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.
- SI engines cannot be replaced with diesel engines.

- 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.
- An uncontrolled engine subject to the Stationary Diesel In-Use Agricultural Engines 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	3 year project life through 12/31/11
	2 year project life through 12/31/12
	1 year project life through 12/31/13

- Engines > 750 hp are not eligible for Tier 2 repower projects.
- Uncontrolled portable engine repower projects are not eligible for Carl Moyer Program funding due to the Portable Equipment ATCM compliance date.
- The percent of repower costs eligible for Carl Moyer Program funding are:
  - Tier 3 repower – 85 percent
  - Certified SI engine repower – 85 percent
  - Electric motor repower – 85 percent
- 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.
- Off-road diesel engines must be certified for sale in California and must comply with durability and warranty requirements.
- The use of a non-certified SI engine shall be subject to approval by ARB staff.
  - 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.
  - 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.

- 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.
- The costs associated with source testing and monitoring requirements for non-certified SI engines are not eligible for funding.

### **C. New Purchase**

A new purchase is an engine or motor that is not replacing an existing engine.

- Engine purchases for new 2008 or later model year non-mobile agricultural equipment can only be electric motors.
- Carl Moyer Program funding may be used for up to 20 percent of the costs associated with a new purchase project.

### **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>.

- 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.
- 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.
- 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.
- Retrofit projects that control PM must use the highest level ARB-verified technology available for the engine being retrofitted.
- Only ARB-verified retrofits are eligible for funding.
- 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.

- Retrofit projects are eligible for up to 100 percent reimbursement using Carl Moyer Program funds.

**E. Non-Engine Agricultural Use Projects**

- Non-engine agricultural use projects are subject to ARB staff approval on a case-by-case basis.

**F. Scrap**

- All engines replaced as part of an agricultural sources engine repower project must be scrapped, consistent with the requirements of Program Administration Chapter.



## Locomotives

Summary of changes to the locomotive project criteria:

Draft Locomotive Project Criteria Disclaimer: ARB is committed to ensuring that the Carl Moyer Program and the Proposition 1B: Goods Movement Emission Reduction Bond Program are complementary and do not compete for projects. However, numerous details still need to be resolved. As a result, project criteria, maximum eligible funding, and timing for funding availability could all be impacted for some goods movement project categories. For example, the *Goods Movement Emission Reduction Program: Staff Draft Concepts for Implementation* document (found at [www.arb.ca.gov/gmbond](http://www.arb.ca.gov/gmbond)) includes a proposal that a new alternative technology locomotive project could be eligible for a fixed dollar funding amount, equivalent to about 50 percent of the new locomotive cost. ARB welcomes comments regarding how criteria and funding amounts for projects eligible for both Carl Moyer Program and Proposition 1B Program incentive funding could be aligned to maximize the programs' efficiency and effectiveness.

Eligible Costs: Proposed maximum eligible funding amounts for an alternative technology switcher project have been updated from 60 percent to 50 percent for Class 1 railroads and 80 percent to 85 percent for Class 3 railroads. Proposed fundable parts for an engine remanufacture kit have also been specified. These amounts may change based on final Proposition 1B: Goods Movement Emission Reduction Bond Program requirements.

### Project Criteria

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

#### A. General

- Class 1 freight locomotive projects in air districts other than the South Coast must have a minimum project life of ten years. All other locomotive projects have a minimum project life of three years. ARB may approve a shorter project life on a case-by-case basis. Projects with shorter lives may be subject to additional funding restrictions, such as a lower cost-effectiveness limit or a project cost cap.
- Class 1 locomotives subject to the South Coast MOU are eligible for Carl Moyer Program funding only if such locomotives are 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 ???. Locomotives subject to the South Coast MOU which receive Carl Moyer Program funding are ineligible to receive fleet average emission credits.

- Military and industrial locomotives and locomotives owned or operated by Class 2 railroads are subject to the same Carl Moyer Program criteria as Class 3 railroad locomotives.
- Emission reduction technologies must be certified/verified by ARB or U.S. EPA and must comply with durability and warranty requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified. If the low emissions technology is not certified or verified it may be approved based on an ARB case-by-case evaluation.
- Locomotive project activity must be based upon fuel consumption.
- Carl Moyer Program funds cannot be used 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.
- All 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.
- 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.
- 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.

## **B. Alternative Technology Switcher Purchase**

Alternative switcher locomotives funded by the Carl Moyer Program to date include genset 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.

- An alternative technology switcher must achieve the applicable federal locomotive emission standards for PM and hydrocarbon emissions, and a NO<sub>x</sub> emission rate at least 30 percent below existing standards (as shown in Table 2). New locomotives with an aggregate engine power rating greater than or equal to 1,006 horsepower must be certified by U.S. EPA to meet these emission rates. These emission rates can be found on U.S. EPA's website at: [epa.gov/otaq/certdata.htm](http://epa.gov/otaq/certdata.htm)<sup>1</sup>. New locomotives with a lower aggregate engine power rating are not required to be certified by U.S. EPA to locomotive standards. New locomotives with an aggregate engine power rating less than 1,006 horsepower which are not certified as a locomotive by U.S. EPA 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.
- Baseline emissions for an alternative technology switcher project reflect Tier 1 emission rates for Class 1 locomotives and uncontrolled emission rates for Class 3 locomotives. 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 railroad switchers, and 85 percent of the total cost of the new switcher for Class 3 railroad switchers.
- Baseline emissions and costs for a new line-haul locomotive purchase project must reflect federal locomotive emission standards for a new locomotive and the cost of a newly manufactured locomotive, respectively.
- An alternative technology switcher must use the cleanest available certified on-road or off-road engine.
- The maximum project life for a new purchase project is 20 years.
- 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.
- Alternative technology locomotives which are not switch locomotives may be considered for funding on a case-by-case basis.

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<sup>1</sup> Non-Methane Hydrocarbon (NMHC) emissions identified in the U.S. EPA Certification should be multiplied by 1.2 to convert to ROG emissions.

### **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.

- 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.
- AESS emission reductions are calculated by applying the ILD factors in Table X. Appendix X provides details regarding use of the ILD factors.
- All ILDs must comply with applicable durability and warranty requirements.
- 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 or Amtrak; 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). Example 1 in Appendix ?? utilizes the ILD factor to calculate the cost-effectiveness of a Class 3 locomotive repower.

### **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. Engine remanufacture kits must be 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.

- 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 X-2 for Class 1 locomotive remanufacture requirements). Pre-1973 locomotives and Class 3 locomotives use the uncontrolled emission rates in Appendix Table X, 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 X.

- The U.S. EPA Certificate of Conformity identifies the applicable locomotive models and model years for which the remanufacture kit may be used. Eligible expenses for Carl Moyer Program funding 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.
- Locomotive engine remanufacture and engine repower projects must achieve at least a 15 percent NO<sub>x</sub> reduction beyond baseline emission levels.
- 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:
  - Tier 0 – 75 percent
  - Tier 1 – 80 percent
  - Tier 2 – 85 percent
- Remanufacture kits must be demonstrated not to increase in-use emissions of NO<sub>x</sub>, ROG, or PM emissions.
- 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 is completed on schedule. Maintenance other than replacement of low-emission fuel injectors is not eligible for Carl Moyer program funding.
- The eligible baseline cost of the remanufacture kit includes the following items: Fuel injectors, oil separator element, scavenging blower assemblies, governor, cylinder liners, piston ring sets, cylinder head assemblies, water, cooling, and scavenging pumps and pump installation kits, top deck cover seals, rocker arm sets, valve bridges, rod bearing sets, camshafts, top deck cover seals, blower thrust valves, and lower liner inserts. Other items may be eligible for funding on a case-by-case basis.
- 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 October 15, 2007, ARB is evaluating several retrofit devices for potential verification.

- 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 or certified by ARB or U.S. EPA for use on a similar engine category, or 3) project emission benefit, durability, and applicability have been demonstrated through in-situ testing.
- A retrofit project must achieve at least a 15 percent reduction in NOx emissions if taking credit for NOx reductions.
- Up to 100 percent of the total cost of a locomotive retrofit project is eligible for Carl Moyer Program funding.
- 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.

## Marine Engines

Summary of changes to the marine project criteria:

Draft Marine Vessel Project Criteria Disclaimer: ARB is committed to ensuring that the Carl Moyer Program and the Proposition 1B: Goods Movement Emission Reduction Bond Program are complementary and do not compete for projects. However, numerous details still need to be resolved. As a result, project criteria, maximum eligible funding, and timing for funding availability could all be impacted for some goods movement project categories. For example, the *Goods Movement Emission Reduction Program: Staff Draft Concepts for Implementation* document (found at [www.arb.ca.gov/gmbond](http://www.arb.ca.gov/gmbond)) includes a proposal that a marine vessel repower project could be eligible for a maximum of \$135-\$270 per horsepower of the new or replaced engine. ARB is continuing to refine the draft criteria in this section to minimize differences between the Carl Moyer Program and the Proposition 1B Program. ARB welcomes comments regarding how criteria and funding amounts for projects eligible for both Carl Moyer Program and Proposition 1B Program funding could be aligned to maximize the programs' efficiency and effectiveness.

ARB Harbor Craft Rule: New draft criteria clarify when harbor craft subject to ARB's Harbor Craft Rule are surplus to the rule.

Require Hours-Based Activity: The draft ARB Harbor Craft Rule compliance dates are based upon vessel hours of operation. Moyer program staff is proposing that engine activity for marine vessel projects be based upon hours rather than fuel. Hours-based activity is easier to verify and can reduce potential errors regarding fuel usage per engine.

New Engine Requirements: New draft criteria indicates that the cleanest available engine (typically Tier 2) be used for harbor craft repowers.

Shore Power Projects: Specific criteria for funding of shore power projects shall be proposed for the guidelines. Staff is proposing allowing the Carl Moyer Program to fund up to 50 percent of shore power transformer costs (to be consistent with the bond program) and 100 percent of necessary vessel retrofit costs.

Eligible Costs: Proposed eligible costs for a marine vessel repower have been specified. These amounts may change based on final Proposition 1B: Goods Movement Emission Reduction Bond Program requirements.

### Project Criteria

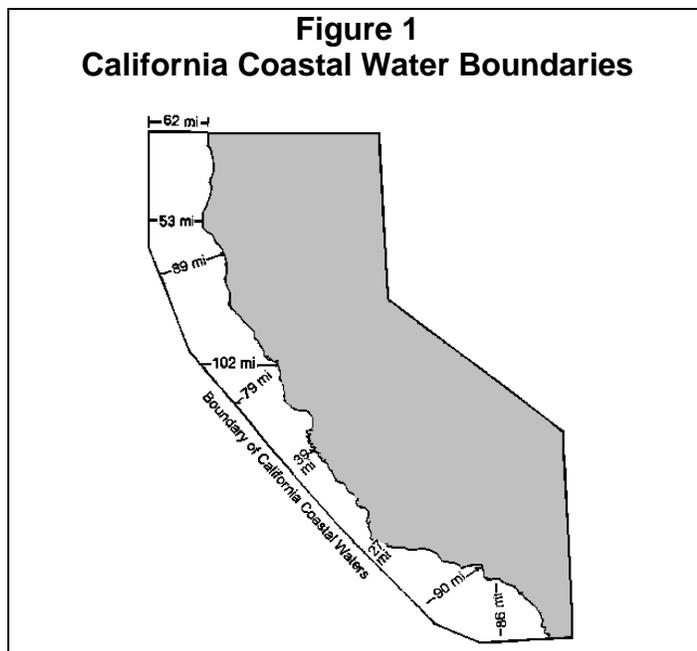
These criteria provide the minimum requirements for Carl Moyer Program marine vessel projects. Marine vessel projects must also conform to project application, contract, reporting and other administrative requirements as described in Part I, Chapter 2 of

these guidelines. Participating districts retain the authority to impose additional requirements in order to address local concerns.

### A. General

- 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.
- A marine vessel engine receiving any type of emission reduction credit or offset is ineligible for Carl Moyer Program funding.
- Only marine vessels with a United States Coast Guard Documentation Number or IMO/Lloyd's Number are eligible for Carl Moyer Program funding. This information must be included in the project application.
- Both propulsion and auxiliary marine engines are eligible for Carl Moyer Program funding.

- Only marine vessel activity in California coastal waters and internal waters may be used to determine project emission reductions. Figure 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.



- 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.
- Marine vessel engines with a functioning hour meter must base project cost-effectiveness calculations and eligibility on hours of operation.

- Marine vessel 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 Proposed In-Use Commercial Harbor Craft Regulation. As of this date, a project participant's Annual Reports must also include a copy of the most recent Initial Report. District staff is 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 Initial Report.
- Marine vessels which are not self-propelled (e.g. barges) are not eligible for Carl Moyer Program funding.
- Emission reduction technologies must be certified/verified by ARB, U.S. EPA, or IMO 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 low emissions technology is not certified or verified it may be approved based on an ARB case-by-case evaluation.
- Carl Moyer Program funds cannot be expended on costs for labor or parts used during routine maintenance.
- Funding is not available for projects where spark-ignition engines (i.e. natural gas or gasoline, etc.) are replaced with diesel engines.
- Only marine engines greater than or equal to 25 horsepower are eligible for Carl Moyer Program funding.
- Commercial fishing vessels are not required to carry and provide proof of insurance to be eligible for Carl Moyer Program funding. The Carl Moyer Program insurance requirement may be waived for other vessel types on a case-by-case basis if it can be shown that the requirement is financially burdensome and creates a barrier to program participation.
- 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.
- Tables X-1 and X-2 summarize the dates by which projects on harbor craft subject to ARB's Proposed Harbor Craft Diesel Engine Rule 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 would need to 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 would have a compliance deadline of December 31, 2012 and therefore would have a maximum project life of four years.

**Table X-1  
Carl Moyer Program Project Completion Deadline for  
In-Use Ferries, Excursion Vessels, Tugboats, and Towboats,  
with Homeport Outside the South Coast AQMD**

<b>Engine Model Year</b>	<b>Total Annual Hours of Operation</b>	<b>Proposed Rule Compliance Deadline</b>	<b>Moyer Project Completion Deadline</b>
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

**Table X-2  
Carl Moyer Program Project Completion Deadline for  
In-Use Ferries, Excursion Vessels, Tugboats, and Towboats  
with Homeport in the South Coast AQMD**

<b>Engine Model Year</b>	<b>Proposed Rule Compliance Date</b>	<b>Moyer Project Completion Deadline</b>
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

- The following criteria apply to engines subject to ARB's Proposed Harbor Craft Diesel Engine Rule:
  - Harbor craft engines receiving a rule compliance extension are ineligible for Carl Moyer Program funding.

- Harbor craft engines demonstrating compliance with the regulation through an Alternative Control of Emissions (ACE) are ineligible for Carl Moyer Program funding.
  - 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.
  - 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 date rather than the date of remanufacture to determine funding eligibility and project life.
- Table X-3 summarizes which marine vessels categories must be surplus to the ARB Harbor Craft Rule (as summarized in Tables X-1 and X-2).

**Table X-3:  
Impact of Harbor Craft Rule on Carl Moyer Program Funding Eligibility**

Vessel Type	Must Be Surplus to ARB Harbor Craft Rule? (If “Yes”, See Tables X-1 and X-2)
Charter Fishing	No
Commercial Fishing	No
Excursion	Yes
Ferry	Yes
Pilot/Work	No
Tow	Yes
Tug	Yes

## **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.

**(The following bullet assumes new draft federal harbor craft standards are finalized as proposed)**

- All new harbor craft engines and replacement engines purchased for Carl Moyer Program harbor craft repower projects must be certified to the engine tier equal to, or more stringent than, the U.S. EPA marine engine standards in effect at the time the project is approved for funding by the air district Board or designated appointee. This requirement is generally considered fulfilled if the newer engine in a harbor craft engine repower is a Tier 2 marine engine. However, beginning in 2009, some

smaller harbor craft engines are required to meet federal Tier 3 marine emission standards (Please see U.S. EPA's website at: <http://www.epa.gov/otaq/marine.htm> for specific requirements for Tier 3 harbor craft emission standards).

- For all Carl Moyer Program engine repowers, the replacement engine certified emission rate 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.
- The maximum project life for a marine vessel repower project is 16 years.
- The percent of marine engine repower costs eligible for Carl Moyer Program funding are:
  - Tier 2 Repower – 80 percent
  - Tier 3 Repower – 85 percent

In addition to the capital cost of a new engine, eligible expenses on a marine vessel repower may include purchase of or modifications to the following, if integral to the funded engine or needed to function with the funded engine: cooling system; fuel and exhaust system; wiring, panel, and harness system; propulsion control system; gauges and alarms; radiator and ventilation. 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, is eligible for funding. Paint, coatings, or hull work not directly related to the engine repower, including work done as part of typical maintenance, repair, or upkeep, are not eligible for Carl Moyer Program funding.

Tax and transport for the items listed above and labor for installation or modifications to these items are also eligible for funding. The following are not eligible for Carl Moyer Program funding: transmission; rudders, shafts and propellers; mufflers; steering system; sea trials; and dry docking. 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 typical vessel overhaul, repair, or maintenance, upkeep, and are critical to achieve the project's emission reduction benefits.

- All engines replaced as part of a marine vessel repower project must be scrapped, consistent with the requirements of Chapter X, Section Y.

### **C. Shore Power (Cold Ironing)**

To date, the Carl Moyer Program has only funded shore power projects on a case-by-case basis. However, due to concern about increased emissions from oceangoing vessels at California ports, funding demand for cold-ironing projects could increase.

- Ship-side retrofit projects for all vessel types and some shore side costs at passenger ship berths are eligible for Carl Moyer Program funding. Shore-side costs at berths for goods movement vessels (i.e. non-passenger vessels) 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 Proposition 1B Goods Movement Emission Reduction Program funding has been approved to a local agency in the district or is otherwise available for marine vessel repower projects. Shore-side costs for a shore power project in the goods movement vessel category may be funded on a case-by-case basis if it can be demonstrated that Proposition 1B funding is not available for this project category.
- Up to 50 percent of the total cost of a shore power transformer (whether on board or at dock) is eligible for Carl Moyer Program funding. 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.
- 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 adequate power to terminals. However, an air district or port authority may pay for shore side infrastructure if using Carl Moyer program match funding. All public funds used for a shore power project, including Proposition 1B funds, shall be included in the Carl Moyer Program project cost-effectiveness calculation.
- The Carl Moyer Program shall not pay for energy costs (fuel or electricity) or shore power routine maintenance, but may pay for labor costs for connection and disconnection of the vessel to shore power. If funded, labor costs must provide detail regarding number of vessel visits, number of workers, and the prevailing wage. The Carl Moyer Program shall pay no more than ten documented hours in labor costs per marine vessel visit.
- 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.
- 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 ships 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.

- The Carl Moyer Program may pay for usage of the shore power project only. 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 an ARB shore power regulation may not extend their contract beyond the regulation's initial compliance deadline, unless the project is surplus to the regulation.
- Shore power projects have a maximum project life of 20 years. Oceangoing vessels and terminals subject to an ARB shore power regulation must use a project life which concludes before the regulation's initial compliance deadline, unless the project is surplus to the regulation.
- 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)

Two hours shall be subtracted from each ship's per visit berthing time to account for time needed to connect and disconnect the vessel to shore power. Ship emission rates and power requirements are included in Appendix X.

- An applicant using an alternative shore power or alternative emissions controls to comply with a shore power regulation is only be eligible for funding on a case-by-case basis if it is demonstrated that the project provides emission reductions surplus to the rule and project cost-effectiveness is based upon surplus reductions only.

#### **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 NO<sub>x</sub> reductions. The criteria for engine remanufacture kit funding help ensure these reductions are real and endure for the full project life.

- 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 NO<sub>x</sub>, PM, and hydrocarbons. Engines certified to meet emission standards for NO<sub>x</sub> only are not eligible for Carl Moyer Program funding.
- The percent of marine engine remanufacture costs eligible for Carl Moyer Program funding are:
  - Tier 2 Remanufacture – 80 percent
  - Tier 3 Remanufacture – 85 percent
- 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.

- 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.

- 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.
- 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. No marine vessel propulsion engines currently are certified as such.

## **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.” The source of funding is from increased motor vehicle registration fees collected by participating local air districts. Unlike the Carl Moyer Program, the Agricultural Assistance Program does not require the emission reductions to be surplus. However, the Agricultural Assistance Program follows the Carl Moyer Program Guidelines for project selection and grant awards.

Staff is considering streamlining the Agricultural Assistance Program Guidelines by referring to applicable chapters in the Carl Moyer Program Guidelines. Project criteria in the “Administration of the Carl Moyer Program” chapter and the “Agricultural Sources” chapter are to be adhered to with the following exceptions:

- 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.
- The cost-effectiveness of a project is based on total emission reductions over the life of the project, not surplus emission reductions.
- Emission reductions in the Agricultural Assistance Program are not required to be surplus.

If the Agricultural Assistance Program Guidelines continue to be a stand-alone document, the following project criteria will apply.

### **Project Criteria**

The project criteria below provide districts and potential applicants with a list of minimum eligibility requirements for Agricultural Assistance Program funding. Criteria focus on emission reductions, cost-effectiveness of total reductions, and the ability for a project to be completed within the timeframe of the program.

Participating districts retain the authority to impose additional requirements in order to address local concerns.

#### **A. General**

- 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. Emission reductions are not required to be surplus.

- No emission reductions generated by the Agricultural Assistance Program shall be used as marketable emission reduction credits.
- No project funded by the Agricultural Assistance Program shall be used for credit under any federal or state emission averaging banking and trading program.
- Engines operating under a regulatory compliance extension granted by the ARB, a local district, or the U.S. EPA are not eligible for funding.
- Projects must meet a cost-effectiveness of total reductions of \$16,000 per weighed ton of NOx + ROG + combustion PM10 reduced calculated in accordance with the cost-effectiveness of total reductions methodology discussed in this chapter. All state funds plus any other under a district's budget authority or fiduciary control contributed toward a project must be included in the cost-effectiveness calculation.
- Agricultural Assistance Program grants can be no greater than a project's incremental cost. The incremental cost is generally expressed as the percent of total project cost. 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.
- Projects must have a minimum project life of three years. ARB may approve shorter project life on a case-by-case basis. Projects with shorter lives may be subject to additional funding restrictions, such as a lower cost-effectiveness of total reductions limit or a project cost cap.
- The contract term must extend to the end of the project life.
- The new engine/equipment must remain in service for the project life.
- Projects must operate at least 75 percent of total equipment hours in California.
- Potential projects that fall outside of these criteria may be approved by the ARB on a case-by-case basis if both of the following occur:
  - Evidence provided to the air district suggests potential real, quantifiable, and enforceable emission reduction benefits.
  - The air districts must consult with ARB staff to determine eligibility of all projects considered for funding on a case-by-case basis. All projects considered on a case-by-case basis must receive ARB approval in writing prior to receiving program funding.
- A potential grantee may not order or make a down payment on a new engine or piece of equipment prior to district approval of the project, either via contract execution or approval by the governing board or board designee. Dealers ordering

engines or equipment prior to district approval of grant applications assume all financial risk, and are in no way ensured program funds, for such technology. A grantee may not receive engines or equipment until the project contract is executed.

- The low emissions technology must be certified or verified and meet the current NOx, PM and/or ROG requirements. For the purposes of the Carl Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified. If the low emissions technology is not certified or verified it may be approved based on an ARB case-by-case evaluation.
- An engine must be rated at greater than 25 hp, which is equivalent to an electric motor greater than 19 kW.
- The default project life is as follows:

Diesel engines	7 years
Spark-ignited engines	7 years
Electric motors	10 years

A project life longer than the default value may be used with approval by ARB staff, however, sufficient documentation must be provided to ARB that supports the selected project life based on the actual remaining useful life.
- 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.
  - Variable frequency devices are eligible for funding if the applicant provides justification for adjustable water needs
  - Reduced voltage starting (“soft start”) technology is eligible for funding if required by the electric service provider.
- Emission reduction calculations may be based on hours of operation or on fuel usage.
- For emission reduction calculations based on fuel usage, an energy consumption factor must be used. The default energy consumption factor for stationary agricultural use engines greater than 50 hp is 17.56 bhp-hr/gal.
- Future annual hours of engine or motor operation for determining emission reductions must be based only on readings from an installed and fully operational hour-meter. Future annual fuel usage for determining emission reductions must be based on fuel logs, purchase receipts or ledger entries specific to the funded engine.

## **B. Repower**

A repower is the replacement of the in-use engine with a new, current model year engine instead of rebuilding the existing engine to its original specifications.

- A repower of an uncontrolled or emission certified (1996+ model year) engine must be with one of the following:
  - A new electric motor.
  - A new off-road diesel engine certified to the current applicable emission standards.
  - A new off-road spark-ignited (SI) engine certified to the current applicable emission standards.
  - 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.
- SI engines cannot be replaced with diesel engines.
- 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 NO<sub>x</sub> emission reduction of at least 15% from the baseline engine NO<sub>x</sub> emissions.
- Uncontrolled portable engine repower projects are not eligible for funding in the Agricultural Assistance Program.
- The percent of repower costs eligible for Agricultural Assistance Program funding are:
  - Tier 3 repower – 85 percent
  - Certified SI engine repower – 85 percent
  - Electric motor repower – 85 percent
- Electric motors may replace diesel or SI 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.
- Off-road diesel engines must be certified for sale in California and must comply with durability and warranty requirements.
- The use of a non-certified SI engine shall be subject to approval by ARB staff.
  - 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.
  - 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.
  - Non-certified SI engines shall be subject to NO<sub>x</sub> and hydrocarbon emission readings using a portable analyzer following local district monitoring requirements.

- The costs associated with source testing and monitoring requirements for non-certified SI engines are not eligible for funding.

### **C. New Purchase**

A new purchase is an engine or motor that is not replacing an existing engine.

- Engine purchases for new 2008 or later model year non-mobile agricultural equipment can only be electric motors.
- Agricultural Assistance Program funding may be used for up to 20 percent of the costs associated with a new purchase project.

### **D. Retrofit**

Retrofit refers to modifications made 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>.

- A retrofit of an uncontrolled diesel engine that reduces NO<sub>x</sub> must be with a retrofit kit that is verified to reduce NO<sub>x</sub> or NO<sub>x</sub>+NMHC emissions to the applicable current off-road engine Tier standard or less for a given engine size.
- A retrofit of an uncontrolled SI engine that reduces NO<sub>x</sub> must be with a retrofit kit that is verified to reduce NO<sub>x</sub>+NMHC emissions to the currently applicable standard for off-road large spark-ignited engines.
- A retrofit of an emission-certified (1996+ model year) off-road diesel engine that reduces NO<sub>x</sub> must be with a retrofit kit that is verified to reduce NO<sub>x</sub> or NO<sub>x</sub>+NMHC emissions by at least 15 percent from the applicable NO<sub>x</sub> or NO<sub>x</sub>+NMHC emission standard.
- Retrofit projects that control PM must use the highest level ARB-verified technology available for the engine being retrofitted.
- Only ARB-verified retrofits are eligible for funding.
- The cost of the retrofit, filters, and maintenance of the retrofit device needed during the project life may be paid for with Agricultural Assistance Program funds provided it meets the cost-effectiveness limit.
- Retrofit projects are eligible for up to 100 percent reimbursement using Agricultural Assistance Program funds.

**E. Non-Engine Agricultural Use Projects**

- Non-engine agricultural use projects are subject to ARB staff approval on a case-by-case basis.

**F. Scrap**

- The existing (old) engine must be destroyed and rendered useless.
  - The destruction of the engine must be documented by district staff verifying the engine serial number matches that on the project application either in-person or through photographic or video evidence.
  - Engines without a visible and legible serial number are only eligible to be repowered if district staff stamps the engine block with the Agricultural Assistance Program project number (or uses alternative permanent marking) when the engine is in the project vehicle or equipment.
  - Methodology for verifying engine destruction must be identified in the district's Policies and Procedures Manual. ARB approval of the Policies and Procedures Manual shall indicate ARB approval of the district's methodology for verifying engine destruction.