

**Proposition 1B:
Goods Movement Emission Reduction Program
Update to Program Guidelines (FY2008-09 Funds)**

STAFF DRAFT CONCEPT PAPER

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Public Workshops to Discuss Concepts:

November 17 - Fresno
November 18 - Oakland
November 19 - Long Beach
November 20 - San Diego
November 21 - Sacramento

Written Comments Due: December 5, 2008

California Environmental Protection Agency



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Update to Program Guidelines (FY2008-09 Funds)
Staff Draft Concept Paper

DOCUMENT AVAILABILITY

Electronic copies of this document and related materials can be found at: <http://www.arb.ca.gov/gmbond>. Alternatively, paper copies may be obtained from the Board's Public Information Office, 1001 I Street, 1st Floor, Visitors and Environmental Services Center, Sacramento, California, 95814, (916) 322-2990.

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CONTACTS

For more information on this Program and upcoming meetings, please see our website at <http://www.arb.ca.gov/gmbond>, call us at (916) 44-GOODS (444-6637), or email us at gmbond@arb.ca.gov

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Proposition 1B: Goods Movement Emission Reduction Program
Staff Draft Concept Paper for Update to Program Guidelines
(FY 2008-09 Funds)

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I. PURPOSE OF THIS CONCEPT PAPER

Air Resources Board (ARB) staff developed this concept paper to aid public discussion of updates to the existing Proposition 1B: Goods Movement Emission Reduction Program (Program) - Guidelines for Implementation (Guidelines). This incentive program to reduce the emissions and health risk from freight transport in California is underway. These updates to the Guidelines are part of a periodic process to revisit the Program requirements following each appropriation of funds.

Currently, staff is not considering any fundamental changes to the structure or goals of the Program – for a complete view of this structure, the goals, and all of the requirements, please see the Guidelines and Staff Report adopted by the Board on February 28, 2008 (available on our website). The updates to the Guidelines include new project choices, modifications to existing project options based on new information, and administrative changes to improve the effectiveness of the Program. This concept paper focuses on the updates, but also provides a complete listing of the project options with the changes under consideration.

Although this paper provides detailed concepts for updating the eligible projects, these details represent staff's current thinking, not a formal proposal. We are seeking your input on the concepts and details described here, and any other updates you believe would make the Program more effective. Any changes must be consistent with the implementing legislation, which directs ARB to focus funding on projects that can achieve the greatest emission reductions and earliest possible health risk reduction in communities heavily impacted by goods movement.

We encourage you to share your thoughts on updates to the Guidelines by:

- participating in the November 17-21, 2008 workshops around the State,
- sending written comments by December 5, 2008, or
- contacting us more informally via phone or email using the contact information on page i of this document.

Receiving your comments by December 5th will let us consider them in development of the proposed Update to the Guidelines. We expect to release the proposed Guidelines, with an accompanying Staff Report, in late December 2008 for the next round of public review and comment. The Board is scheduled to hear public testimony and consider adoption of the updated Guidelines at its January 22-23, 2009 meeting.

If adopted by the Board, these updates would apply to the second installment of \$250 million appropriated under the Fiscal Year (FY) 2008-09 State budget. Unless specifically noted otherwise, the changes would not apply retroactively to projects funded with the first installment of FY2007-08 monies.

II. BACKGROUND

ARB is implementing a multi-pronged approach to characterize and reduce air pollution from the diesel engines in trucks, locomotives, ships, harbor craft, and cargo equipment that are used to move goods into and throughout California. In April 2006, the Board adopted a comprehensive Emission Reduction Plan for Ports and Goods Movement in California. The key goals are: (1) to reduce the statewide health risk from diesel particulate matter (diesel PM) 85 percent by 2020, (2) to expeditiously reduce the localized health risk from diesel PM in impacted communities, and (3) to reduce the emissions of nitrogen oxides (NOx) that contribute to regional fine particle and ozone pollution to achieve ambient air quality standards. We are also working on a longer-term strategy to spur improvements in the efficiency of the State's goods movement system to reduce greenhouse gas emissions.

This incentive Program complements ARB's regulatory actions. The funds provide an incentive to equipment owners to upgrade to cleaner equipment and achieve early or extra emission reductions beyond those required by applicable regulations or enforceable agreements.

A. Health Impacts from Goods Movement.

California residents face serious health impacts from freight-related diesel pollution, especially in communities near ports, rail yards, roads with high truck traffic, and distribution centers. The diesel engines that move freight are also a major cause of high regional ozone and fine particle levels that harm millions of Californians today. Freight-related emissions are a public health concern at both the regional and community levels because they contribute to serious health effects, such as cardiac and respiratory diseases, increased asthma and bronchitis episodes, increased risk of cancer, and premature death.

B. Program Authority and Scope

Proposition 1B, approved by voters in 2006, authorizes \$1 billion in bond funding to the Air Resources Board (ARB or Board) to cut freight emissions in four priority trade corridors. The State budget for FY2007-08 provided the first installment of \$250 million. The major sources eligible for bond funding include heavy-duty trucks, locomotives, shore side power for cargo ships, commercial harbor craft, cargo handling equipment, and infrastructure for electrification of truck stops, distribution centers, and other places trucks congregate.

Senate Bill 88 (Chapter 181, Statutes of 2007) created the Program and directed ARB to maximize the emission reduction benefits while achieving the earliest possible health risk reduction in communities heavily impacted by goods movement. Assembly Bill 201 (Chapter 187, Statutes of 2007) provided additional minor clarification. Governor Schwarzenegger's Executive Order S-02-07 on Bond Accountability provides further direction to ARB to ensure accountability and transparency in Program implementation.

The Program is a partnership between ARB and local agencies (like air districts and ports) to quickly reduce air pollution emissions and health risk from freight movement along California's priority trade corridors. ARB awards funding to local agencies; those agencies then use a competitive process to provide incentives to equipment owners to upgrade to cleaner technology. The Program will supplement regulatory actions and other incentives to cut diesel emissions that will result in emission reductions not otherwise required by law or regulation.

C. Prior Board Actions

On February 28, 2008, the Board approved the initial Program Guidelines, along with overall funding targets for each trade corridor and source category for the entire \$1 billion. We continue to believe the basis for those targets is sound; we are not developing any staff recommendations for changes. The Board also awarded \$25 million in early grants to five air districts to upgrade trucks and install shore-based electrical power for ships.

On May 22, 2008, the Board awarded over \$221 million in remaining FY2007-08 funds to nine local agencies (air districts and seaports) to upgrade trucks, locomotives, harbor craft and install shore power for ships.

The adopted Guidelines, supporting staff reports, and Board resolutions for these actions are all available on the Program website.

D. Current Status

In June 2008, ARB and the recipient local agencies signed grant agreements to implement each of the first year funding awards. Appendix A lists each grant awarded for FY2007-08 funds.

Local agencies have completed the first round of solicitations for most of the truck grants. The requests for truck replacement funding far exceeds the available dollars, while the applications for truck retrofit funding are well below the allotted funds. Local agencies can request ARB approval to transfer retrofit funds to replacement projects if they have demonstrated a good faith effort to secure and fund retrofit projects. Several local agencies have submitted requests and ARB has approved the first one for the San Joaquin Valley Air Pollution Control District as of the date of this paper. Action on the other requests will follow. Solicitations and funding for locomotive, shore power, and harbor craft projects are also underway.

On October 31, 2008, each local agency provided its first quarterly progress report on Program implementation. These reports show when the solicitations were conducted, how many applications were received for each project type, the status of the competitively ranked lists and selection of projects for funding, and statistics on the number of projects in the inspection and contract phases. We will post these reports on the Program website in November 2008.

III. ELIGIBLE PROJECTS (FY2008-09 FUNDS)

The specifications for eligible projects are an integral part of the update to the Guidelines that must occur after each appropriation of funding. The Guidelines direct ARB staff to evaluate advances in technology, changes in equipment costs, regulatory actions, demand for Program funds in the prior funding cycle, and other new information that influences the design of project requirements.

This staff draft concept paper outlines our ideas for the eligible projects in each source category that could be funded with FY2008-09 monies. We welcome your feedback on both the direction and details of these concepts to aid our development of the formal proposal.

Local agencies can choose which source categories they wish to seek funding for and would need to allow equipment owners to apply for all eligible project options in that category, with funding awards determined by the competitive process.

A. Trucks Serving Ports and Intermodal Rail Yards and Other Trucks

1. *Summary of All Equipment Project Options*

Although this concept paper presents the project options for both truck categories together for convenience and brevity, we intend to maintain a funding pot for port/rail yard trucks and another for other trucks. We are also clarifying that trucks serving port and intermodal rail yards may choose to apply for funds dedicated to that category or for funds offered under the other trucks category. The other trucks category does not include requirements for future port/rail yard service.

While retaining the project options offered in the first year of the Program (with updated funding levels), we are considering additional options for combined NOx/PM retrofit devices and replacement of older trucks with used trucks meeting Model Year (MY) 2007-equivalent emissions or better. Table 1 shows the combination of project options that ARB staff is developing for Board consideration.

2. *Discussion of Concepts for Change*

This section describes the updates we are considering for truck projects, along with a brief discussion of the basis for those changes. Under the combination of existing and new equipment project options, a local agency would evaluate all of the applications from truck owners and score each application based on the established criteria of emission reductions and cost-effectiveness to determine which trucks receive funding. Each truck competes independently, so there is no advantage for owners of large fleets.

Table 1: Updated Equipment Project Concepts for Trucks

Eligible Equipment	Upgrade	Maximum Funding	Project Life
MY1994-2006 diesel truck	(1) Retrofit with ARB-verified Level 3 diesel PM filter	\$5k	4 yrs
MY2004-2006 diesel truck	(2) Retrofit with ARB-verified NOx and PM control device to achieve MY2007-equivalent emissions	\$15k	4 yrs
MY2003 and older diesel truck	(3) Repower w/MY2007-equivalent new engine and scrap old engine	\$20k	8 yrs or 350/500k mi
	(4) Replace w/MY2010-equivalent diesel or alternative fuel truck and scrap old truck	\$50k	8 yrs or 350/500k mi
		\$25k	4 yrs
	(5) Replace w/MY2007-equivalent <u>new</u> diesel or alternative fuel truck and scrap old truck	\$45k	8 yrs or 350/500k mi
		\$22.5k	4 yrs
	(6) Replace w/MY2007-equivalent <u>used</u> diesel or alternative fuel truck with less than 200k miles and scrap old truck	\$35k	8 yrs or 350/500k mi
\$17.5k		4 yrs	
Truck A: MY2003-2006 diesel truck Truck B: MY1990 and older diesel truck	(7) <u>3-way truck transaction</u> <ul style="list-style-type: none"> • Truck A is retrofit with Level 3 diesel PM filter and replaced with new Truck C (MY2007-equivalent or better) • Retrofit Truck A replaces old Truck B • Old Truck B is scrapped 	\$45k towards Truck C	8 yrs or 500k mi for Truck C
Existing truck stop/distribution center with 2 yrs operation or more	(8) Install electric infrastructure for power to replace diesel engine operation by truck, auxiliary power unit, and/or transportation refrigeration unit while truck is parked at facility.	Variable based on cost-effectiveness of 0.5 lbs/ State \$ or greater.	10 yrs

Table 1 Notes:

1. Eligible trucks must also carry “goods” for sale, and demonstrate 2 years of California or California IRP registration and 50% of travel within the trade corridors.
2. MY2007-equivalent emissions means an engine tested on the heavy-heavy duty test cycle with certification and FEL values of 1.20 g/bhp-hr NOx or lower and 0.01 g/bhp-hr PM or lower. MY2010-equivalent emissions means an engine tested on the heavy-heavy duty test cycle with certification and FEL values of 0.20 g/bhp-hr NOx or lower and 0.01 g/bhp-hr PM or lower.

3. Upgraded trucks must be operational in advance of adopted regulatory requirements for Best Available Control Technology (BACT). Under the anticipated requirements of the Statewide Truck and Bus Rule for MY2010-equivalent PM and NOx BACT, the advance period for truck replacement projects is based on the later compliance deadline, typically for NOx control.
 - 6 mos. for retrofit projects
 - 2 yrs. for replacement projects for small fleets of 1-3 trucks
 - 3 yrs for replacement projects for fleets of 4 or more trucks
4. All trucks funded under the Program must show 100% California operation and California base-plated registration during the project life. The project life for a replacement is 8 years or 350,000 miles for a truck funded under the “Trucks Serving Ports and Intermodal Rail Yard” category and 8 years or 500,000 miles for “Other Trucks.”
5. Trucks receiving funds under the “Trucks Serving Ports and Intermodal Rail Yards” category must also commit to at least 150 visits per year to ports and/or intermodal rail yards. Owners of these trucks may instead choose to compete for funding in the “Other Trucks” category.

a. Eligibility – truck weight and engine size

Concept: Expand the eligibility from Class 8 diesel trucks with a Gross Vehicle Weight Rating (GVWR) of 33,001 pounds (lbs) or greater to also allow Class 7 or Class 8 two-axle diesel tractors that move goods and have both: (1) a GVWR of 31,000 lbs or greater and (2) an engine displacement of 10 liters or more. In either case, any replacement truck would still be required to have an engine certified to MY2007 or MY2010 equivalent emission levels on the heavy-heavy duty vehicle emissions test cycle that requires durability of the emission controls measured over 435,000 miles.

We are also evaluating whether the definition in the proposed Statewide Truck and Bus Rule of a “heavy-heavy duty diesel vehicle” would be an appropriate alternative to target goods movement trucks. This definition includes trucks with either (1) a GVWR of 33,001 lbs or greater or (2) a body type model registered with the Department of Motor Vehicles as a “truck-tractor” with a driver’s cab and engine, fitted with a coupling at the rear known as a fifth wheel, and designed to pull a large trailer or semi-trailer on the open highway.

Basis: In the first year of the Program, ARB focused on making funding available to the class of heavy trucks with the greatest emissions (and potential reductions) per vehicle -
- Class 8 diesel trucks with a GVWR of 33,001 lbs or greater that move goods. We are considering expanding the eligibility to compete for funding to slightly smaller Class 7 two-axle tractors that haul goods with a 10-liter engine, similar to the lighter end of the Class 8 range. These smaller trucks may haul the same load as a Class 8 truck using a different tractor-trailer configuration. Staff would refine the Project Benefits Calculators used to determine the potential emission reductions from each truck project to reflect any resulting differences in emissions. All truck projects would compete head-to-head for funding based on the established formula for weighted emission reductions and Program cost-effectiveness.

b. Eligibility – truck previously retrofit with Program funds

Concept: Allow trucks that have installed a diesel PM filter with Program funding, and operated with that filter for at least 3 years, to be eligible to compete for funding to replace the same truck at a reduced funding level. This concept would also apply retroactively to projects funded with FY2007-08 funds.

For example, if an owner received \$5,000 to install a Level 3 diesel particulate filter on a MY1999 truck, that owner could apply 3 years later for funding to replace it with a MY2010-equivalent truck. However the maximum funding amount for the new truck would be reduced by the Program funds already received (i.e., \$50,000 truck replacement funds minus \$5,000 truck retrofit funds = maximum Program funding of \$45,000).

Basis: The current Program Guidelines restrict a truck owner who received Program funding for a PM retrofit device from applying for funding to later replace the same truck. This new approach would remove a barrier that is limiting interest in the retrofit option. By capping the combined Program funds, we can ensure that no single truck receives extra funds through this approach.

c. Eligibility – demonstrating prior California registration

Concept: Expand the current eligibility requirement for two years of continuous California base-plated or IRP registration to also allow trucks traveling at least 10,000 miles per year with partial year registration in California to compete for funding.

Basis: Some owners of trucks in port, seasonal agricultural, or other operations choose to register monthly with the Department of Motor Vehicles to avoid paying registration fees for months when the truck may not be in service. Allowing these trucks to compete for funding based on the potential emission reductions and cost-effectiveness would expand access to the Program while retaining the funding priority for the most beneficial projects.

d. Eligibility – using hours of operation to determine emissions

Concept: Allow owners of a very limited number of specified truck types to use documented hours of operation (rather than vehicle miles traveled) as the activity input to calculate the potential emission reductions for the competitive funding process. These truck types would include concrete/cement mixers and dump trucks that use the truck engine to power operations that don't involve travel. These trucks would still be subject to all of the Program eligibility requirements, including the transport of "goods" as defined in the Program Guidelines.

Basis: Since these types of trucks may produce significant air pollution without logging miles on the vehicle's odometer, the potential for emission reductions by upgrading these trucks can be more accurately estimated using hours of operation.

e. Project option – NOx + PM retrofit

Concept: Add new equipment project option for trucks with MY2004-2006 engines to receive Program funding up to \$15,000 per truck for installation of a combination NOx/PM retrofit device that allows the truck to achieve MY2007-equivalent emissions levels or lower.

Basis: Combination NOx / PM retrofits that achieve MY 2007 or 2010 emission standards (as proposed in the Statewide Truck and Bus rule) have the potential to fund more projects than can be accomplished with replacements due to the lower cost per truck. We believe that these combination NOx / PM retrofits should be funded at a higher level than existing PM only retrofits (currently at \$5,000) due to the additional NOx reduction. Although NOx retrofit devices have not yet been verified by ARB, selective catalytic reduction (SCR) technology is in development for this application and may be verified in time to utilize FY2008-09 Program funding.

ARB staff compared these combination NOx / PM retrofit devices against truck replacements and found similar Program cost-effectiveness ratios. The similar cost effectiveness results demonstrate that verified NOx / PM retrofit technology can provide competitive emission reductions per state dollar as compared with replacements, but at a lower initial cost.

f. Project option – replacement with new or used truck

Concept: Set Program funding cap at \$50,000 for replacement with a truck meeting MY2010-equivalent emission levels and \$45,000 for replacement with a new truck meeting MY2007-equivalent emission levels, as defined for this Program. Also offer up to \$35,000 for replacement with a used truck (with less than 200,000 miles) meeting MY2007-equivalent emission levels or lower.

Basis: With the requirement in the proposed Statewide Truck and Bus Rule that all trucks eventually comply with MY2010-equivalent emission standards, this Program should share the same end goal. We believe it is important to retain \$50,000 as the top funding cap for the cleanest technology (MY2010-equivalent emissions) expected to be available in the timeframe to spend this round of Program funds (late 2009-2011).

In the early phase, this may be limited to natural gas or diesel-electric hybrid trucks as they become available for limited segments of the trucking industry. In the later phase, we expect that diesel trucks certified to those 2010 levels will also become available. Trucks meeting these MY2010-equivalent levels reduce NOx emissions by over 80 percent compared to the MY2007-equivalent trucks, helping to cut fine particle and ozone pollution.

In this transition period, we believe it is appropriate to continue to allow replacement with trucks meeting 2007-equivalent levels, but at reduced funding amounts. These

funding caps make a typical replacement with a 2007-equivalent truck versus a 2010-equivalent truck equally cost-effective in terms of pounds of pollution reduced per State dollar invested. As used 2007-equivalent trucks become available in more significant numbers, we are considering an option for purchase of a used truck to expand the choices available to truck owners at a lower overall cost than a new truck. By limiting the used truck to 200,000 miles or less at the time of purchase, we can sustain the emission benefits of the Program's investment.

g. Funding type – lease-to-own option

Concept: Expand local agency implementation of lease-to-own truck programs to increase access to truck owners' access to funding for a new truck with more affordable financing and monthly payments. We will recommend providing all local agencies awarded funds for truck replacement with the option to develop lease-to-own programs, subject to review and approval of the terms and conditions by ARB staff. We are also requesting input on how to encourage greater availability of these programs.

Basis: Based on lease-to-own programs currently being implemented, they can be an economical way for truck owners to finance and ultimately take ownership of a new truck. These programs are more affordable for the truck owner without significant assets since they typically don't require a significant down payment, the monthly payments are less than with conventional financing because the interest rate is more favorable and the lease term is longer, and the amount to purchase the truck at the end of the lease is designed to be affordable.

h. Funding type –grant/loan guarantee

Introduction: We are developing a combined grant/loan guarantee option for small truck fleets to allow more trucks to be replaced for the same State investment. A grant/loan guarantee incentive would help offset the purchase price of the truck, improve access to financing, and support more favorable loan terms. Our current thinking includes these elements:

- Incorporate a loan guarantee component into the existing Program structure, including the competitive funding process for trucks.
- Require local agencies to offer this grant/loan guarantee option if they administer truck replacement funds.
- Rely on the local agencies to: solicit applications from truck owners, do inspections, rank applications, execute contracts to award grants, do reporting, etc.
- Use the California Pollution Control Financing Authority's (CPCFA) California Capital Access Program (CalCAP) to administer the loan guarantee (more specifically, a loan loss reserve account) with interested lenders.
- Make the funding level for the loan loss reserve account directly responsive to owner demand, with no set aside of funds for this purpose. This is critical under the Program to avoid funds reverting back to the legislatively controlled Prop. 1B account in case of low demand.

Concept: Establish a grant/loan guarantee funding option for replacement of trucks in small fleets (1-3 trucks), with a cap of \$30,000 for the grant and \$80,000 for the loan guarantee. The truck owner would need to invest at least \$5,000 in the initial purchase to increase accountability.

Since an \$80,000 guarantee would require commitment of approximately \$10,000 in Program funds to be deposited in a lender's loan loss reserve account for the life of the loan, the maximum Program funds would equal \$40,000 for this option. When the loan is successfully paid off, the \$10,000 would be returned to ARB for reinvestment in the Program. In case of default, the \$10,000 goes to the lender.

Local agencies would offer small fleet owners a choice at the time of application between two funding options for truck replacement projects: a grant or a combined grant/loan guarantee. These applications would compete for funding against all other applications for truck projects in that solicitation. If the application is awarded funding, the truck owner could then apply for a loan with a CalCAP lender, using the pending grant as part of the down payment. Each lender would use its own underwriting criteria to determine loan approval and financing terms, subject to the conditions set forth in its agreement with CalCAP.

Basis: Adding a grant/loan guarantee option would enable the Program to help replace more trucks by leveraging the available funds. We are considering limiting this option to owners of small fleets who would typically face the greatest challenge in obtaining financing.

Since an applicant for a combined grant/loan guarantee would typically be requesting fewer Program dollars than other applicants for replacement funds (\$40,000 versus \$45,000 or \$50,000), those grant/loan guarantee applications would likely be more cost-effective than many of their competitors. This improved cost-effectiveness would increase the opportunity for receiving funding in the competitive process.

B. Locomotives and Rail Yards

1. *Summary of All Equipment Project Options*

While retaining the project options offered in the first year of the Program (with updated requirements for line-hauls), we are considering adding two new project options to address locomotive and rail yard emissions. The new options include repower of medium horsepower locomotives to meet Tier 3 standards and installation of emerging hood control technology for locomotives undergoing testing during maintenance operations at rail yards. Table 3 shows the combination of project options that ARB staff is developing for Board consideration.

Table 2: Updated Equipment Project Concepts for Locomotives and Rail Yards

Eligible Equipment	Upgrade	Maximum Funding	Project Life
Switcher locomotive (1,006 hp to 2,500 hp) Uncontrolled, Tier 0 or Tier 1 diesel freight locomotive	(1) Replace, repower, or rebuild with a new generator-set, hybrid, or alternative technology to meet 3.5 g/bhp-hr NOx, 0.14 g/bhp-hr PM	Lower of 50% or \$750k	15 yrs
Medium locomotive (2,300 hp to 3,800 hp) Uncontrolled, Tier 0 or Tier 1 diesel freight locomotive	(2) Repower with a new Tier 3 engine or alternative technology to meet 4.0 g/bhp-hr NOx, 0.1 g/bhp-hr PM	Lower of 50% or \$500k	15 yrs
Line haul locomotive (over 3,300 hp) Uncontrolled, Tier 0 or Tier 1 diesel freight locomotive	(3) Replace, repower, or rebuild to meet Tier 2 standards and install Tier 2 Plus retrofit kit (see discussion below for timing)	Lower of 50% or \$1M	15 yrs
Hood control technology for existing freight rail yard	(4) Install infrastructure for an articulated hood, with a scrubber system for PM control and selective catalytic reduction (SCR) technology for NOx control	Variable based on cost-effectiveness of 0.65 lbs/State \$ or greater and verified use level	To be determined

Table 2 Notes:

1. Eligible locomotives must have operated in California over the past 2 years, with 50% of their operation within the trade corridors. See discussion under eligibility for alternative approaches to meeting this requirement.
2. Eligible old locomotives must have used greater than 20,000 gallons of diesel fuel per year.
3. All locomotives funded under the Program must show 100% California operation, except for periodic out-of-state maintenance as allowed by the contract with the local agency.
3. Per State law, none of the upgrades funded under the Program can be used to comply with any mandated emission reduction requirement under agreements with federal, State, or local agencies.

2. Discussion of Concepts for Change

This section describes the updates we are considering for locomotive and rail yard projects, along with a brief discussion of the basis for those changes. Under the combination of existing and new equipment project options, a local agency would evaluate all of the applications from locomotive owners and score each application based on the established criteria of emission reductions and cost-effectiveness to determine which projects receive funding.

a. Eligibility – demonstrating prior operation in California

Concept: Provide an alternative mechanism for a railroad to demonstrate that an existing old locomotive, or a similar model, has been operating in California and the trade corridors for the required 2-year eligibility period.

Basis: Some railroads can track the operating location of specific locomotives over time, but others can only document that they had a certain number of specific horsepower units operating at a rail yard or serving a line-haul route. Since the objective is to replace a dirty unit with a cleaner one under this Program, we are considering an alternative documentation approach to maximize the locomotives that could compete for funding.

b. Eligibility –1998 MOU for the South Coast Air Basin

Concept: Provide a mechanism to allow locomotives operated in the South Coast Air Basin by the Class I railroads to compete for funding by demonstrating that the resulting emission reduction benefits would not be used to meet each railroad's obligations under the fleet average emission reduction requirements of the 1998 Memorandum of Understanding. ARB would amend the calculation protocol for that agreement to completely exclude any Program funded locomotives from the fleet average.

Basis: This approach would ensure that any locomotives receiving Program funds for upgrades would generate emission reductions that are not counted towards compliance with the fleet average standard in the 1998 MOU. All of the emission reductions of upgrades funded under this Program will provide benefits beyond those achieved by the 1998 MOU. A locomotive project and all of its resultant benefits must be applied wholly to either the MOU (with no eligibility for Program funding) or to this Program.

c. Project option – medium horsepower locomotive

Concept: Add a new project option for medium horsepower locomotives and set the Program funding cap at the lower of 50% or \$500,000 per locomotive to repower an uncontrolled, Tier 0 or Tier 1 unit with a new engine meeting 4.0 g/bhp-hr or less NOx and 0.1 g/bhp-hr or less PM.

Basis: Medium horsepower locomotives, defined in the Program as being in the range of 2,300 hp up to 3,800 hp, are typically old and uncontrolled units that can be used as helper locomotives to add pushing or pulling power to a line haul locomotive (i.e., extra power to move trains over hills). They are used extensively in California and can be cost-effectively upgraded with installation of a new engine that reduces NOx by 70% and PM by 85% compared to an uncontrolled unit. This funding cap makes this new option equally cost-effective as replacing an existing line haul locomotive in terms of lbs/State \$ invested.

d. Project option – line-haul locomotive

Concept: Retain option and Program funding cap at the lower of 50% of eligible costs or \$1,000,000 per locomotive towards the replacement of an existing uncontrolled, Tier 0 or Tier 1 line haul locomotive by a new Tier 2 or lower-emission engine, based on the most effective standard certified by U.S. EPA at the time of purchase. Add secondary requirement that locomotive owners also install the upcoming "Tier 2 Plus"

retrofit kit to further reduce PM emissions. Based on availability of certified kits, the kit must be installed at the earliest of: (1) the new locomotive/engine purchase, (2) within 2 years of a kit becoming available for that locomotive model, or (3) at the first remanufacture of the new or upgraded locomotive.

Tier 2:	5.5 g/bhp-hr NOx and 0.2 g/bhp-hr PM
Tier 2 Plus:	5.5 g/bhp-hr NOx and 0.1 g/bhp-hr PM

Basis: We expect that retrofit kits for line hauls to meet the stricter Tier 2 Plus standards will become available within the timeframe for expenditure of this round of funding (2009-2011). The retrofit kit will reduce PM emissions by an additional 50%.

e. Project option – hood control technology for rail yards

Concept: Offer a new equipment project option based on technology being demonstrated at a rail yard and port to capture and control emissions from the locomotive exhaust during maintenance testing. Set Program funding cap at a level commensurate with a cost-effectiveness of 0.65 pounds of weighted emission reductions per State dollar invested (lbs/State \$), the average cost-effectiveness for a typical locomotive project, as determined by the Program’s Project Benefits Calculators. The cost-effectiveness must be equal to or greater than 0.65 for the hood project to be eligible to compete against other locomotive projects for funds.

Basis: A new control technology device (known as the hood or bonnet) may become available during the timeframe for expenditure of this round of funds (2009-2011) to reduce emissions generated by locomotives during maintenance and diagnostics operations at rail yards. An example of this technology consists of a stationary infrastructure with movable bonnet that directs locomotive emissions to a scrubber for PM control and an SCR device for NOx removal. The technology may be able to reduce NOx and PM by over 90%. However, with a projected to cost of more than \$8 million and the low emissions available for capture and control (about 0.8 tons/yr PM and 32 tons/yr NOx), we do not expect the system to be as cost-effective as other locomotive project options. We are developing the option since it can reduce localized diesel pollution affecting nearby communities. To be competitive, railroads applying for funding to install this technology would need to lower the Program funding requested until the bond cost-effectiveness reaches 0.65 lbs/State \$ or higher.

C. Shore Power

1. *Summary of All Equipment Project Options*

We are considering retaining the options for grid and non-grid based shore-side power installation projects, and adding an option for an emerging “hood” control technology that can be placed over the ship exhaust stack to collect and treat emissions at dock.

Table 3 shows the combination of project options that ARB staff is developing for Board consideration.

Table 3: Updated Equipment Project Concepts for Ships and Terminals

Eligible Equipment	Upgrade	Maximum Program Funding	Project Life	Other Conditions (partial description)
Existing cargo ship berth	(1) Install grid based shore power (shoreside power infrastructure to berth only)	Lower of \$2.5M or 50%	20 yrs	25% of ship visits by 2011 60% of ship visits by 2014 70% of ship visits by 2017 90% of ship visits by 2020
Existing cargo ship terminal	(2) Install non grid based shore power (natural gas engine w/SCR or zero-emission system)	\$200k/MW	7 yrs	1,000 hrs/yr by 2010 2,000 hrs/yr by 2012
		\$140k/MW	5 yrs	3,000 hrs/yr by 2014+
Existing cargo ship terminal	(3) Install infrastructure for an articulated hood, with a scrubber system for PM control and SCR for NOx control	Variable based on cost-effectiveness of 1.5 lbs/ State \$ or greater and verified use levels.	To be determined	To be determined (based on a higher level of use than required under the ARB rule for ships at dock to ensure the reductions are "extra")

Table 3 Notes:

1. Program-funded shore power installation must be complete and operational in advance of adopted regulatory requirements for ships at dock. For grid-based shorepower projects, this means operability by 2012. For non-grid shore power and the hood technology, the focus is on extra reductions because the first compliance date is January 2010. So, for non-grid shore power and the hood technology, this means operability by January 2010 with minimum use levels set to ensure greater emission reductions than required by the rule.
2. Non-grid based shore power systems and hood control systems must be warranted by the manufacturer for the project life and demonstrate continued effectiveness through periodic emissions testing.

2. Discussion of Concepts for Change

This section describes the one addition we are considering to reduce ship emissions at dock, along with a brief discussion of the basis for that change. Under the combination of existing and new equipment project options, a local agency would evaluate all of the applications from ports, shippers, and/or marine terminal operators and score each application based on the established criteria of emission reductions and cost-effectiveness to determine which projects receive funding.

a. Project option - hood technology for ship terminals

Concept: Offer new equipment project option based on technology being demonstrated at a rail yard and port to capture and control emissions from the ship exhaust while at dock. One device may have multiple hoods capable of capturing the exhaust from multiple ships and routing it to a single pollution control device. Set

Program funding cap at a level commensurate with a cost-effectiveness of 1.5 lbs/State \$, the average cost-effectiveness for a typical grid-based shore power project, as determined by the Program's Project Benefits Calculators. The cost-effectiveness must be equal to or greater than 1.5 for the hood project to be eligible to compete against other shore power projects for funds.

Basis: A new control technology device (known as the hood or bonnet) may become available during the timeframe for expenditure of this round of funds (2009-2011) to reduce emissions generated by ships running their auxiliary engines while at dock. An example of this technology consists of a stationary infrastructure with movable bonnet(s) that directs ship emissions to a scrubber for PM control and an SCR device for NOx removal. The technology may be able to reduce NOx and PM by over 90%, with a high purchase and annual operating cost. To be competitive, ports or marine terminal operators applying for funding to install this technology would need to lower the Program funding requested until the bond cost-effectiveness reaches 1.5 lbs/State \$ or higher.

D. Commercial Harbor Craft

1. *Summary of All Equipment Project Options*

We are considering retaining the options for repowering or replacing tugs, tows, and other boats with Tier 2 engines (with a shorter project life), and adding new options for upgrading a tug to a diesel-electric hybrid model through repower or replacement. Table 4 shows the combination of project options that ARB staff is developing for Board consideration.

Table 4: Updated Equipment Project Concepts for Commercial Harbor Craft

Eligible Equipment	Upgrade	Maximum Program Funding	Project Life
Diesel tug, tows	(1) Repower or replace Tier 0 or Tier 1 propulsion engine or vessel w/new Tier 2 engine or better and scrap old engine/tug/tow	Lower of 50% or \$135/hp of old engine	8yrs
	(2) Repower or replace Tier 0 or Tier 1 propulsion engine or vessel with hybrid model achieving emissions at least 30% below Tier 2 levels and scrap old engine/tug	Lower of 50% or \$175/hp of old engine	8 yrs
Diesel work or pilot boat, comm. fishing boat with 700 operating hrs/yr	(3) Repower or replace Tier 0 or Tier 1 engine or vessel w/new Tier 2 engine or better and scrap old engine/boat	Lower of 80% or \$215/hp	8 yrs

Table 4 Notes:

1. Eligible vessels must have 2 years of California registration and California home port operation.
2. Program-funding repower or replacement of tugs, tows, or other boats must be completed in advance of any adopted regulatory requirements for those vessels. For tugs and tows, this advance period is 2 yrs. If ARB adopts additional regulations for other harbor craft, we expect to recommend the same 2 year advance period for Program funding.
3. Hood control systems must be warranted by the manufacturer for the project life and demonstrate continued effectiveness through periodic emissions testing.
4. Eligible harbor craft must meet operational requirements in California for the old vessel and commit to 100% California home port operation in the trade corridors for the upgraded vessel.

2. Discussion of Concepts for Change

This section describes the updates we are considering for harbor craft projects, along with a brief discussion of the basis for those changes. Under the combination of existing and new equipment project options, a local agency would evaluate all of the applications from harbor craft owners and score each application based on the established criteria of emission reductions and cost-effectiveness to determine which projects receive funding.

a. Project option – shorten project life for all options

Concept: Reduce project life (and contractual commitment) from 15 years of California-home port operation to 8 years for tugs/tows, and from 10 years to 8 years for other vessels.

Basis: The current project options to upgrade tugs and tows include a requirement for a 15-year commitment to California home port operation. Likewise, there is a 10-year commitment for other types of commercial harbor craft involved in goods movement, such as work, pilot, crew or supply boats, and high use commercial fishing vessels. ARB awarded over \$4 million in first year (FY2007-08) funds to the Bay Area for harbor craft projects, but the demand for those funds was very limited.

Harbor craft owners stated concerns about the length of the contract commitment and the inability to routinely rotate their boats to ports in other states throughout each year. We could reduce the time commitment to 8 years (like trucks) for both categories and still achieve a reasonable cost-effectiveness on these projects. The Guidelines allow harbor craft funded under the Program to operate at any of the ports in California's trade corridors. If their operations require harbor craft owners to move vessels to out-of-state or out-of-country ports for several months throughout the year, then those vessels are not appropriate for funding under this Program.

b. Project option – replacement/repower of tugs/tows with hybrid technology

Concept: Add an option to replace a tug boat with a hybrid tug boat, or to repower an existing tug boat propulsion engine with a hybrid system. Set a Program funding cap as the lower of 50% of the total cost or \$175/horsepower of the engine in the old vessel to replace a vessel with a Tier 0 or Tier 1 propulsion engine with a new hybrid vessel or new diesel-electric hybrid power system that achieves emissions at least 30% below Tier 2 levels.

Basis: The amount of time a tug boat makes full use of the horsepower available in its multiple engines makes hybrid tugs attractive alternatives to the standard tug and its diesel engines. Currently, much of a tug boat's operating time is in moving from one location to another or in waiting for a job, activities that use only a small fraction of the engine horsepower. A hybrid tug boat can use the electric batteries for its low power needs, saving fuel, engine wear and emissions. The batteries can be recharged by the existing, standard engines when they are running.

ARB and the current manufacturer of this new technology expect it to reduce PM, NOx and fuel consumption by over 30% relative to Tier 2 engines. ARB will be testing the first hybrid tug boat in early 2009.

The one company close to producing a hybrid tug boat for commercial consumption will be following that with a hybrid retrofit system that should be available before June of 2010. A second company is projecting to have a hybrid tug available sometime in 2010.

E. Cargo Handling Equipment

1. *Summary of All Equipment Project Options*

We are considering expanding the options to upgrade a diesel powered rubber tire gantry crane to include replacing the diesel engine with an electric power system. We are also evaluating the combination of project life and funding level to encourage more projects via a shorter project life with less funding to retain cost-effectiveness. Table 5 shows the combination of project options that ARB staff is developing for Board consideration.

Table 5: Updated Equipment Project Concepts for Cargo Handling Equipment

Eligible Equipment	Upgrade	Maximum Program Funding	Project Life
Existing diesel rubber tired gantry crane with a Tier 4 engine or ARB-verified Level 3 diesel PM filter	(1) Retrofit ARB-verified Level 1 or better energy storage system	Lower of 50% or \$100k	10 yrs
Existing diesel rubber tired gantry crane	(2) Repower diesel engine with electric power system	Lower of 50% or \$100k	10 yrs

Table 5 Notes:

1. Eligible equipment must show 2 years of operation at a California port or intermodal rail yard within one of the trade corridors.
2. Energy storage systems and electric power systems must be warranted by the manufacturer for the project life.

2. Discussion of Concepts for Change

This section describes the updates we are considering for cargo equipment projects. Under the combination of existing and new equipment project options, a local agency would evaluate all of the applications from cargo equipment owners – combined with applications for shore power/ships at dock projects that are part of the same funding category -- and score each application based on the established criteria of emission reductions and cost-effectiveness to determine which projects receive funding. To be competitive against grid-based shore power projects, we would expect that applicants would need to request funding below the maximum levels shown on Table 5 unless the cranes have a very high use level.

The emission reductions from Program-funded upgrades cannot be used to comply with ARB’s adopted rule for diesel powered equipment used at ports and intermodal rail yards. To receive Program funds to add on an energy storage system, the crane must already comply with the rule – the reductions achieved by the storage system are “extra” beyond the regulatory requirements. The situation with repowering a diesel crane with an electric power system is different – this project would be a mechanism to comply with the rule, but the benefits are above and beyond those required under the rule. Therefore, we would limit the available Program funding for the repower based on the incremental benefit of going from the Tier 4 engine/Level 3 diesel PM filter required by the rule to more efficient electric power. This focus on the incremental reductions ensures that Program funds achieve the “early” or “extra” reductions required by the implementing statute.

a. Project option – rubber tired gantry crane - repower with electric

Concept: Add a second project option to replace the diesel engine in a rubber tired gantry crane with an electric power system. Set the funding cap at the lower of 50% of eligible costs or \$100,000, with a project life of 10 years.

Basis: Removing the diesel engine from an existing rubber-tired gantry crane and retrofitting it to run on electrical power would reduce emissions beyond the requirements of ARB's rule for cargo equipment at ports and intermodal rail yards, and provide the added benefit of cutting fuel consumption and greenhouse gases. This conversion process could cost between \$330,000 to \$500,000 per crane, including terminal modifications.

Unlike underground, railed crane electrification systems that may significantly change a terminal's physical structure, retrofit electrification methods use an attached or detached cable reel system and above-ground trenches to carry and protect the power cable. The diesel generator set is removed, and a cable reel, drive motors, gearbox, and other necessary components are installed. In addition to the crane modifications, some minor facility modifications are necessary to support the electric infrastructure and reconfigure the yard layout.

b. Project option – rubber tired gantry cranes - energy storage systems

Concept: Align funding cap and project life for energy storage system option with new option for conversion to electric power. Set the funding cap at the lower of 50% of eligible costs or \$100,000, with a project life of 10 years.

Basis: This option may become more desired and competitive as marine and rail terminals upgrade their cranes to comply with ARB's rule, resulting in equipment that qualifies for Program funding to add an energy storage system. The shorter project life (with a commensurate reduction in funding) may make it easier for energy storage system manufacturers to produce devices that can be warranted for the full project life.

F. General Provisions

1. 100% California Operation

One of key elements of the Program is the requirement that equipment funded with bond monies stay in California for the life of the project to ensure that Californians receive the maximum benefit from the investment. This applies to trucks, locomotives, harbor craft, cargo equipment, and non-grid based shore power projects. We have heard concerns that this provision would result in a very limited demand for project funds, especially for trucks. Based on early implementation of the first year grants, the demand for truck replacement funding far exceeds the available supply of funds.

Despite the 100 percent California operation requirement, thousands of truck owners who applied for Program funding to replace their old trucks did not receive funding in the first round because their projects were less competitive than others. We expect these owners to apply again when the next round of funds is available. We also anticipate that the demand will increase further after Board consideration of the Statewide Truck and Bus Rule in December 2008. With this information, we believe it is appropriate to retain the requirement for 100 percent California operation for FY2008-09 funds and revisit the issue again for subsequent funding.

2. Co-Funding with Other State Monies to Reduce Greenhouse Gases

Senate Bill 88 directs ARB to consider multiple criteria for evaluating which projects to fund. These criteria include the reduction of greenhouse gases, consistent with and supportive of emission reduction goals. Although the Program is focused on reducing regional air pollution and the localized health risk from diesel PM in communities near freight facilities, some of the eligible projects also reduce greenhouse gases through electrification or improved efficiency.

Assembly Bill 118 established new sources of incentive funding to reduce air toxics, criteria pollutants, and greenhouse gases through programs to be administered by multiple agencies. The Air Quality Improvement Program, administered by ARB, and the Alternative and Renewable Fuel and Vehicle Technology Program, administered by the California Energy Commission (CEC), are potential sources of funding that could be combined with Proposition 1B monies for projects involving conversion to electric, fuel cell, or hybrid technologies.

To further support ARB's efforts to meet the emission reduction goals of Assembly Bill 32 and the Governor's directives, we are evaluating a change to the Program Guidelines to encourage co-funding from other State sources for projects with significant greenhouse gas benefits. The Program supports use of other State funds, but includes those funds in the calculation of cost-effectiveness that impacts the competitiveness of a project. Since greenhouse gases are not quantified as part of the emission reduction or cost-effectiveness scores used for the Program's competitive ranking process, the AB118 funds could be excluded from the calculation of State funds invested.

We are working with ARB and CEC staff running the AB118 programs to develop recommendations on whether and how co-funding should be encouraged for specific types of projects to meet all of the State's air quality objectives.

3. Temporary Diversion of Trucks from Scrappage

The Puget Sound Clean Air Agency contacted ARB to seek our participation in a project to scrap and replace very old diesel trucks operating at Northwest ports to reduce the localized health risk from diesel particulate in communities near those ports. The owners of the scrapped Northwest trucks would then lease newer, refurbished trucks equipped with diesel particulate filters, and SmartWay efficiency upgrades to reduce greenhouse gases. The Puget Sound Agency asked ARB to supply the trucks to be refurbished by temporarily diverting trucks replaced under this Program for re-use outside California.

The Puget Sound Agency, together with the non-profit Cascade Sierra Solutions, have proposed that ARB temporarily divert up to 500 trucks in the MY1998-2003 range from scrappage. Those trucks would be retrofit with particulate filters and efficiency devices by Cascade Sierra and used to replace the old Northwest port trucks. The proponents would equip the re-used trucks with a global positioning system device and prohibit those trucks from operating in California to ensure we achieve the expected NOx benefits of the Prop. 1B Program that are vital to attainment of air quality standards in California. In 2016, the re-used Prop. 1B trucks in the Northwest would be scrapped and replaced with models meeting 2007 emission standards or better as required by local regulations. ARB would receive approximately \$2,500 per truck to re-invest in the Prop. 1B Program to further clean up the California truck fleet.

This project offers the opportunity to reduce the health risk from exposure to diesel particulate matter in Northwest port communities and provide additional funding for low-emission trucks in California. If this concept is approved by the Board, ARB staff would execute an agreement with the Puget Sound Agency to establish the requirements and ensure that communities in both California and the Northwest benefit from cleaner air as a result.

ARB staff is also considering a proposal by an air district to divert a very limited number of trucks to a vocational program to provide training to install retrofit control devices, with the condition that any such trucks (1) not be operated in California and (2) be scrapped at the end of a defined time period.

This concept would apply retroactively to any truck replacement projects using FY2007-08 funds if the contract between the truck owner and the local agency is executed after Board adoption of the updated Guidelines authorizing these temporary diversions.

IV. PROGRAM ADMINISTRATION

A. Interim Changes Implemented via Executive Order

When the Board adopted the Guidelines in February 2008, the Board delegated authority to ARB's Executive Officer to make interim modifications (if needed) and bring the modifications to the Board for formal approval concurrent with updates to the Guidelines. ARB has issued Executive Orders to transfer early grant funds to the main grants for the same source category and to revise the emission level for new locomotives or engines. We are currently developing another Executive Order to extend the time allowed (from 30 days to 60 days) to complete the scrappage process and have the dismantler submit documentation of destruction to the local agency. These Executive Orders are posted on the Program webpage. We will be including the modifications covered by these Orders in the updates the Guidelines.

B. Administrative Changes

Based upon experience from the first year's operation, staff is also developing updates to the administrative requirements that affect how ARB staff and local agencies implement the Program. These administrative updates may include:

- Defining options to allow awarded funds to be redirected to other source categories if there is a lack of eligible projects; this includes what decisions could be made by the local agency, by ARB staff, or reserved for Board action.
- Introducing "recapture" and reuse of funds prior to statutorily mandated reversion.
- Expanding community outreach by local agencies before they apply to ARB.
- Clarifying solicitation requirements on local agencies for outreach, timeframes, and public availability of ranked list prior to funding.
- Requiring local agencies to enter project applications/funding information into the Goods Movement On-line Database. This Database will be publicly accessible through the Program website, beginning in early 2009.
- Requiring local agency resolutions to identify the source and quantity of all non-private matching funds committed to projects.
- Requiring completed compliance checks prior to competitive ranking and selection of equipment projects for funding.
- Developing contract buy-out provisions/costs for those equipment owners who cannot complete their responsibilities under the contract. The current option is for the owner to sell his or her equipment to a buyer willing to assume the remainder of the contract obligations. As an alternative for truck replacement projects, we will propose a buy-out option based on pro-rating the grant amount over the remaining life of the contract, plus a penalty of \$5,000 - \$10,000 per truck to cover the costs of funding a new project with the returned monies to achieve the expected emission reductions.

APPENDIX A

**Proposition 1B: Goods Movement Emission Reduction Program
Award of First Year (FY2007-08) Program Funds**

Trade corridor	Local agency	Funding category	Program funding
Los Angeles/ Inland Empire	Ports of Los Angeles & Long Beach	Port Trucks	\$98,000,000
	South Coast District	Port Trucks (early)	\$6,930,000
		Other Trucks (early)	\$6,877,500
		Port Trucks	\$2,625,000
		Other Trucks & Truck Stop/Distribution Center Electrification	\$18,322,500
		Locomotives	\$3,090,000
			\$135,845,000
Central Valley	San Joaquin Valley District	Other Trucks (early)	\$5,701,500
		Other Trucks	\$40,530,000
	Sacramento District	Other Trucks (early)	\$840,000
		Other Trucks	\$4,462,500
		Locomotives	\$10,300,000
			\$61,834,000
	Bay Area	Bay Area District	Shore Power (early)
Port Trucks			\$6,767,250
Other Trucks			\$17,377,500
Locomotives			\$3,090,000
Harbor Craft			\$4,263,844
		\$34,354,594	
San Diego/ Border	San Diego District	Port Trucks (early)	\$651,000
		Port Trucks	\$2,362,500
		Other Trucks	\$5,302,500
	Imperial District	Other Trucks	\$3,748,500
	Port of San Diego	Shore Power	\$2,500,000
		\$14,564,500	
Total*			\$246,598,094
ARB administration			\$3,401,906
			\$250,000,000

* Includes local agency administration funds that total 2.5% of the funds awarded