

Chapter 12: MARINE VESSELS

This chapter describes the minimum criteria and requirements for Carl Moyer Program marine vessel projects. Air districts may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

Air Resources Board (ARB or the Board) has adopted two regulations that impact funding opportunities for marine vessel projects: 1) Amendments to the Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline (Commercial Harbor Craft regulation or CHC) and 2) Regulations to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port (Shore Power Regulation). There are limited funding opportunities for marine vessels subject to these regulations.

**Table 12-1
Summary of Funding Opportunities**

Project Type	Subject to ARB Rule	Moyer Funding Opportunities ¹
Barge, crew & supply, dredge, excursion, ferry, towboat, tugboat, engine repower, remanufacture, retrofit or new purchase	Commercial Harbor Craft Regulation ²	Limited opportunity
Fishing vessel or pilot/work boat engine repower, remanufacture, retrofit or new purchase	No	Not limited by regulation
Shore power - shore-side	Shore Power Regulation ³	Very limited opportunity
Shore power - vessel retrofit	Shore Power Regulation ³	Limited opportunity

¹ *Limited opportunities* means a fleet's compliance status with the ARB regulation must be determined. Contact air district Moyer Program staff or consult CHC regulation Carl Moyer Implementation Charts at: <http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm> in addition to these guidelines.

² Harbor Craft Regulation: <http://www.arb.ca.gov/ports/marinevess/harborcraft.htm>

³ Shore Power Regulation: <http://www.arb.ca.gov/ports/shorepower/shorepower.htm>

Project Types:

1. Engine Repower: Replacing an old vessel engine with a newer, lower emission engine. Limited opportunities remain for those vessel engines subject to the in-use compliance requirements of the CHC regulation. Repower must be completed at least three years prior to the vessel's in-use compliance date. Based on the vessel's operation, the newer engine's emissions must be surplus to the currently required United States Environmental Protection Agency (U.S. EPA) marine engine emission standard (i.e., Tier 2 or cleaner).

Remanufacture Kit: Kits are comprised of engine component parts that, when installed, reduces the engine's emissions. Limited Moyer funding opportunities remain for those vessel engines subject to the in-use compliance requirements of the HCR. Remanufacture must be completed at least three years prior to the vessel's in-use compliance date.

2. Retrofit Device: The installation of an ARB verified diesel emission control strategy (VDECS). This project type will be considered for funding on a case-by-case basis.
3. New Purchase: New marine vessels with propulsion and auxiliary engines certified to be at least 30 percent cleaner than the applicable oxides of nitrogen (NOx) emission standard are eligible for Carl Moyer Program funding on a case-by-case basis.
4. Shore Power Projects: Due to regulatory compliance deadlines, all shore-side shore power projects within port locations subject to the regulation must be completed and operational prior to January 1, 2014. Ship-side shore power projects will not be eligible after this date unless the applicant can demonstrate that it will be surplus to the implementation requirements of ARB's Shore Power Regulation. Shore-side projects meeting the eligibility criteria of the Goods Movement Program are eligible for Carl Moyer Program funding only on a case-by-case basis. Carl Moyer Program funds cannot be commingled with Proposition 1B Goods Movement Program funds.

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

B. Maximum Eligible Funding Amounts

Table 12-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix H.

**Table 12-2
Maximum Project Costs Eligible for Carl Moyer Program Funding**

Project Type		Maximum
Barge, crew & supply, dredge, excursion, ferry, towboat, tugboat	Engine repower or remanufacture kit	50 percent
Fishing, pilot, work boat, other vessels not subject to Harbor Craft Regulation in-use compliance requirements	Engine repower or remanufacture kit compliant to EPA marine Tier 2 emission level	80 percent
	Compliant to EPA marine Tier 3 emission level	85 percent
Any vessel propulsion engine repower with an off-road Tier 2 or cleaner certified engine		Case-by-Case Basis
ARB Verified Marine Retrofit Device		Case-by-Case Basis
New Vessel Purchase		Case-by-Case Basis
Shore power – shore-side		50 percent of transformer & other equipment between the vessel and transformer
Shore power – ship-side		100 percent of retrofit cost; 50 percent of transformer cost

C. Project Criteria

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

1. General Marine Project Criteria

- (A) To be eligible for Carl Moyer Program funding, an applicant for harbor craft funding must have a United States Coast Guard Documentation Number, except in cases where such documentation is not required (such as fishing boats constructed outside the United States, vessels of less than five net ton displacement, or vessels owned by non-United States citizens). In such cases, the applicant must include with the application documentation at least one of the following:
 - (1) A valid California vessel registration (CF) number and a copy of the California Department of Fish and Game license can be provided instead of a Coast Guard Documentation Number.
 - (2) The vessel's Lloyd's/International Maritime Organization (IMO) number for an oceangoing vessel that does not have any of the above documentation.

- (B) Both propulsion and auxiliary engines are eligible for Carl Moyer Program funding.
- (C) Only marine vessel activity in California coastal waters and internal waters may be used to determine project emission reductions. For the purposes of the Carl Moyer Program, California water boundaries are based upon each air district's emission inventory boundary. If a local air district has not established an emission inventory boundary, ARB and air district staff will determine an appropriate boundary for use in project evaluation.
- (D) Non-captive California fleets and vessels may be considered for funding on a case-by-case basis if their operation in California coastal waters can be properly documented.
- (E) Funding is not available for projects where spark-ignition engines are replaced with diesel engines. Repowering a diesel engine to a spark-ignited engine may be considered on a case-by-case basis.
- (F) Only marine engines equal to or greater than 25 horsepower are eligible for Carl Moyer Program funding.
- (G) Harbor craft engines less than 50 horsepower are exempt from the in-use compliance requirements of the Harbor Craft Regulation. These engines are considered surplus.
- (H) Engines on marine vessels with wet exhaust systems are eligible for Carl Moyer Program funding if the project vessel meets all other applicable program requirements. The wet exhaust systems themselves are not eligible for Carl Moyer Program funding. A wet exhaust factor of 0.80 must be applied to the baseline and reduced emission propulsion and auxiliary engine emission calculations for all projects on vessels with wet exhaust systems.
- (I) New engines must be installed and operational at least three years prior to the compliance deadline specified by the CHC regulation. Project life for an engine cannot extend beyond that engine's compliance deadline. For compliance deadlines, see implementation charts at: <http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm>
- (J) Air districts have the option of calculating the project cost-effectiveness on a per vessel basis.
- (K) Carl Moyer Program funding can be based on engine hours or fuel use. All harbor craft vessels are required to install and maintain a functioning hour meter as required by the Commercial Harbor Craft Regulation. Hours of operation are the preferred basis for project cost-effectiveness.

calculations and eligibility. Air districts have the option of requesting and utilizing historical fuel usage. This data must be based on the previous two years of historical fuel usage documentation specific to the vessel being funded. Acceptable forms of documentation may include fuel logs, purchase receipts or ledger entries. Grant funding that is based on historical fuel usage may not exceed the grant funding amount that would be based on hours of operation; the more conservative calculation must be used.

- (L) Owners and operators of engines subject to the Commercial Harbor Craft Regulation must include a copy of the most recent Initial Report in their project application. The reporting requirements are outlined under California Code of Regulations, title 17, section 93118.5(h)(1).

2. Repower

Repower projects involving the replacement of an older harbor craft engine with a newer, cleaner engine must meet the following criteria:

- (A) All new engines and replacement engines purchased for Carl Moyer Program marine vessel repower projects must be certified to meet U.S. EPA Tier 2 marine emission standards or cleaner (e.g., Tier 3 or higher). Use of an off-road certified engine must adhere to the requirements set forth under California Code of Regulations, title 17, sections 93118.5(e)(3) and (e)(4), especially the marinization requirements set forth in Code of Federal Regulations, title 40, part 1042.605.
 - (1) Project proposals for repower of propulsion engines with off-road certified engines will be considered on a case-by-case basis.
 - (2) Tier 2 engines that are less than or equal to 100 horsepower and are installed after January 1, 2009 are only eligible for Carl Moyer Program funds if it can be demonstrated that a Tier 3 engine is unavailable or technically infeasible.
- (B) For all marine engine repower projects, the replacement engine must provide at least a 15 percent NOx reduction relative to the baseline engine. The replacement engine cannot be significantly modified or reconfigured in any way during the project life.
- (C) The maximum project life for a marine vessel repower project is 16 years. A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.
- (D) The total project repower cost may include charges for the following:

- (1) The capital cost of the new engine.
 - (2) Purchase of or modifications to the cooling system; fuel and exhaust system; wiring, panel, and harness system; power take-offs; propulsion control system; gauges and alarms; and radiator and ventilation, if attached to or integral to the functioning of funded engine.
 - (3) Costs related to the purchase and/or installation of a new transmission may be eligible on a case by case basis. Districts should provide the following for all requests:
 - a. Documentation from engine dealer/installer justifying the necessity of a new transmission.
 - b. Notification to ARB liaison with correspondence to be placed in air district project file.
 - (4) Frames needed to be extended or other parts needed to be cut or modified in order to accommodate the new engine, as well as paint or coating needed to protect those specific areas that were cut or modified.
 - (5) Tax and transport for eligible parts or costs.
 - (6) Labor for installation of or modification to parts eligible for funding.
- (E) The total project repower cost may not include charges for the following:
- (1) Rudders or propellers.
 - (2) Steering system.
 - (3) Sea trials and dry docking.
 - (4) Paint, coatings, or hull work not directly related to the engine repower.
 - (5) Tax and transport for ineligible parts or costs.
 - (6) Labor for installation of or modification to parts ineligible for funding.
 - (7) Any parts or labor typically included as part of the vessel or engine overhaul, maintenance, repair, or upkeep.
 - (8) These and other items may be eligible for funding on a case-by-case basis if it can be proven that they are not part of the typical vessel overhaul,

repair, upkeep or maintenance and are a necessary part of the engine repower.

- (F) All engines replaced as part of a marine vessel repower project must be scrapped, consistent with the requirements of Chapter 3: Section BB.

3. Engine Remanufacture Kit

Engine remanufacture kit projects must meet the following criteria:

- (A) A remanufacture kit for a specific vessel type may be certified by the U.S. EPA, IMO, or approved by ARB to meet the requirements of the Commercial Harbor Craft Regulation, but must be surplus to the current in-use requirements of Commercial Harbor Craft Regulation.
 - (1) Engine remanufacture kits specific to vessels not subject to the in-use requirements of the Commercial Harbor Craft Regulation must meet U.S. EPA Tier 2 marine or Tier 2 nonroad engine emission standards or cleaner (e.g., Tier 3 or higher).
 - (2) Engine remanufacture kits specific to vessels subject to the in-use requirements of the Commercial Harbor Craft Regulation must be surplus to the current requirements of the regulation.
 - (B) The applicant must provide a copy of the regulatory compliance letter from ARB (similar to an Executive Order) to the air district demonstrating that the remanufacture kit is compliant with the Commercial Harbor Craft Regulation. Remanufacture kits which reduce NOx only are not eligible for Carl Moyer Program funding.
 - (C) Remanufacture kit projects have a maximum project life of six years.
 - (D) If the U.S. EPA Emissions Warranty for the project kit requires fuel injectors to be replaced before the end of the project life, the applicant must replace the injectors with equivalent low-emission injectors. The Carl Moyer Program project cost may include the replacement injectors. The project annual report must include documentation that all required maintenance identified in the U.S. EPA Emissions Warranty (if applicable) is completed on schedule. Maintenance other than replacement of low-emission fuel injectors is not eligible for Carl Moyer Program funding.
4. Retrofits: Retrofits include selective catalytic reduction, diesel oxidation catalysts or diesel particulate filters. A retrofit device must be verified by ARB to reduce emissions from the project engine in order to be eligible for funding. This project type will be considered for funding on a case-by-case basis.

5. New Purchase

New marine vessels with propulsion and auxiliary engines certified to be at least 30 percent cleaner than the applicable NOx emission standard are eligible for Carl Moyer Program funding on a case-by-case basis. While no marine vessel propulsion engines currently are certified as such, engines meeting these emission limits may become commercially available as engine technologies continue to advance.

- (A) The incremental cost for a marine vessel new purchase project is the difference between the cost of the cleaner-than-required vessel and the cost of a similar vessel that meets existing standards.
- (B) New purchase of a ferry is not eligible for Carl Moyer Program funding due to the ARB Harbor Craft Regulation requirement that new ferries utilize the Best Available Control Technology.

6. Shore Power (Cold Ironing)

- (A) Only a port authority, terminal operator, or marine vessel owner may apply to receive Carl Moyer Program funding for a shore power project.
- (B) Applications for Carl Moyer Program funding of shore power projects must include a copy of the Initial Terminal Plan, as identified in Section (g) of the Shore Power Regulation. All subsequent project reports to air districts must include any new or updated Terminal Plans in order to evaluate compliance with the project contract.
- (C) The commitment of visits and hours made by the applicant, above those required by the Shore Power Regulation, must be used in the project cost-effectiveness calculation and is required in the contract between the applicant and the air district.
 - (1) For shore-side funding – The fleet of vessels that have been retrofitted and have the ability to use the port or terminal's shore-side shore power committing to a specific number of visits and hours.
 - (2) For ship-side funding – The entire fleet roster and all the California ports of harbor the fleet will be visiting. From the locales submitted, the fleet must indicate per location, the number of vessel visits and hours per year the fleet will be utilizing shore-side power.
- (D) Up to 50 percent of the cost of a shore-side transformer and other equipment between the vessel and shore-side transformer at the port or terminal is eligible for Carl Moyer Program funding for projects installed and operational prior to January 1, 2014. Projects at terminals and ports

that are not subject to the Shore Power Regulation are not subject to the January 1, 2014 deadline and are eligible for funding at any time.

- (1) "Installed and operational" for a shore-side shore power project means that the customized equipment at the port or terminal has been installed and a vessel visit has occurred to demonstrate that the integrated system is operational, prior to January 1, 2014. If the first scheduled vessel visit does not occur until after this date, the project will be considered installed and operational pending the scheduled visits occur as contracted.
 - (2) Shore-side projects meeting the eligibility criteria of the Goods Movement Program are eligible for Carl Moyer Program funding only on a case-by-case basis. Carl Moyer Program funds cannot be commingled with Proposition 1B Goods Movement Program funds.
 - (3) Due to the lengthy project lead times required for shore-side shore power projects, the following minimum requirements must be met to consider the project expended:
 - a. The necessary customized equipment for each location (e.g., port or terminal) has been procured and invoiced. Examples of eligible equipment include a transformer, grounding switches, a service breaker, a capacitor bank, and cranes or booms for cable management that have been customized for installation at the project location;
 - b. The customized equipment is present on site and ready for installation; and
 - c. Seventy-five percent or more of the Carl Moyer Program-eligible customized equipment costs or total project costs (including costs borne by the applicant or local public utility), whichever is greater, has been paid by the expenditure deadline.
 - d. The Carl Moyer Program shall not pay for modifications or enhancements made to the shore-side electrical infrastructure needed to bring power to the terminal.
 - (E) Up to 100 percent of necessary vessel (non-transformer) retrofit costs, specifically required to allow the vessel to plug into shore-side power, are eligible for Carl Moyer Program funding. Up to 50 percent of any necessary transformer costs on board the vessel are eligible for Carl Moyer Program funding.
- Docking at ports or terminals funded by the Proposition 1B Goods Movement Program is not prohibited; however, vessel retrofits funded with Carl Moyer Program funds cannot claim emission reductions resulting

from ship visits to ports or terminals during the active Proposition 1B Goods Movement Program contract period.

- (F) The Carl Moyer Program shall not pay for energy costs (fuel or electricity), shore power routine maintenance, or labor costs for connection and disconnection of the vessel to shore-side power.
- (G) All contracts for Carl Moyer Program funding of shore power projects must include a stipulation that receipt of program funding is contingent on the project being post-inspected and operational. The project contract must include a provision that if the shore power is not used for the total hours committed to in the contract, the project participant shall return the pro-rated contract amount (commensurate with the shortfall in usage) to the air district. If the contract activity is not met, air districts may refer to Chapter 3 Section FF.4. to address the underutilization. However, the contract must include language prohibiting the grantee from obtaining a waiver from the contracted usage – specifically Section FF.4.(D).
- (H) Shore power projects have a maximum project life of 20 years. A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.
- (I) Terminals using or intending to use the Equivalent Emission Reduction Option to demonstrate compliance with the Shore Power Regulation may be eligible for Carl Moyer Program funding on a case-by-case basis, if it can be demonstrated that the project shall achieve emission reductions surplus to the rule.
- (J) The emissions from vessels using grid power in lieu of auxiliary engines when the vessel is at berth are assumed to be reduced by 90 percent. The emission reductions from a shore-side transformer project are calculated as the total emission reductions from each participating ship. Each ship's emission reductions calculated as: (Ship emission rate * berthing time * power requirements * number of visits * 0.9)

Estimated berthing time shall include the time needed to connect and disconnect the vessel to shore power. Ship emission rates and power requirements are included in Appendix D.