

## Appendix 1: Eligible Technologies and Vehicles

### Eligible Diesel Emissions Reduction Solutions

Projects must include one or more of the following diesel emission reduction solutions that utilize a certified engine configuration and/or a verified technology. Additional information about the diesel emission reduction solutions listed below, as well as technical tips and important points to consider, is available at [www.epa.gov/cleandiesel/documents/420p11001.pdf](http://www.epa.gov/cleandiesel/documents/420p11001.pdf).

**a. Verified Retrofit Technologies:** A “retrofit” project is defined broadly to include any technology, device, fuel or system that, when applied to an existing diesel engine, achieves emission reductions beyond what is currently required by EPA regulations at the time of the engine’s certification. A list of eligible, EPA verified retrofit technologies is available at: [www.epa.gov/cleandiesel/verification/verif-list.htm](http://www.epa.gov/cleandiesel/verification/verif-list.htm); a list of eligible, California Air Resources Board (CARB) verified retrofit technologies is available at: [www.arb.ca.gov/diesel/verdev/vt/cvt.htm](http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm). Technologies proposed for funding under this category must be specifically named on one of these lists at the time of proposal submission to DAQ, and must only be used for the vehicle application specified on the list. The technologies include:

**1) Exhaust Controls:** Exhaust Controls include pollution control devices installed in the exhaust system (such as oxidation catalysts and particulate matter filters), or systems that include crankcase emission control (like a closed crankcase filtration system). This funding can cover up to 100% of the cost (labor and equipment) for an eligible emission control. DAQ suggests that each applicant requesting diesel particulate filters datalog all vehicles to be considered before the application is submitted, so that there is evidence that the fleets can accommodate the technology.

**2) Engine Upgrades:** Generally, an engine upgrade involves the removal of parts on a certified engine configuration and replacement with parts that cause the engine to represent an engine configuration which is certified to meet more stringent federal emission standards. Some engines are able to be upgraded to reduce their emissions by applying manufacturer upgrades that are retrofits verified by EPA or CARB as a package of components demonstrated to achieve specific levels of emission reductions. Some engines are able to be upgraded through the application of a “kit” that is used to rebuild the engine to represent an engine configuration which is certified to meet more stringent federal emission standards. Engine upgrades may not be available for all engines, and not all upgrades may achieve an emissions benefit.

Funding can cover up to 50% of the cost (labor and equipment) of an eligible nonroad or marine engine upgrade. To be eligible for funding, the upgrade must either be a verified retrofit as described above, or a “kit” that will result in an emissions benefit by rebuilding the engine to represent an engine configuration which is certified to meet more stringent federal emission standards. For an engine to be eligible for an upgrade, the engine must be currently operating and performing its intended function. DAQ suggests that the application include a discussion of the availability of engine upgrades and indicate the pre- and post-project emission standard levels of the engines in order to demonstrate that the upgrade will result in an emissions benefit.

**b. Verified Idle Reduction Technologies:** An idle reduction project is generally defined as the installation of a technology or device that reduces unnecessary idling of the main drive engine of diesel vehicles or equipment and/or is designed to provide services (such as heat, air conditioning, and/or electricity) to vehicles and equipment that would otherwise require the operation of the main drive engine while the vehicle is temporarily parked or remains stationary. The reduction in idling will conserve diesel fuel and must also lower emissions.

A list of EPA verified idle reduction technologies is available at: [www.epa.gov/smartway/technology/idling.htm](http://www.epa.gov/smartway/technology/idling.htm). Technologies proposed for funding under this category must be specifically named on this list, and may only be used for the vehicle application specified on the list. The technology categories include: Auxiliary power units and generator sets, battery air conditioning systems, thermal storage systems, fuel operated heaters, and alternative maritime power.

Please note that technologies for the electrification of engines/vehicles/equipment other than those specifically listed above, cannot be considered verified idle reduction technologies, but may be eligible as a Repower (removal of a diesel engine and its replacement with an electric power source, see Section c, below) or a Replacement (replacement of a diesel powered engine/vehicle/equipment with an eligible electric engine/vehicle/equipment, see Section d, below).

DAQ will not fund stand-alone idle reduction technologies. This funding can cover up to 100% of the cost (labor and equipment) for all eligible, verified idle reduction technologies, only if the technology is combined on the same vehicle with a new eligible verified exhaust control. For this RFP, auxiliary power units (APUs) and generators are not eligible for vehicles with 2007 model year or newer certified engine configurations on long haul Class 8 vehicles. Please note that APUs and generators are eligible for installation on long haul Class 8 vehicles with 2006 model year and older certified engine configurations.

**c. Certified Engine Repowers:** “Repower” refers to replacing an existing engine with a newer, cleaner engine that is certified to a more stringent set of engine emission standards. Repower includes, but is not limited to, diesel engine replacement with an engine certified for use with a cleaner fuel and/or the replacement of a nonroad engine with a highway engine. In order for a repower to be eligible, the repowered vehicle, engine or equipment must continue to perform the same function as before the repower. DAQ suggests that the application also indicate the pre- and post- project standard emission levels of the engines to be repowered, in order to ensure that the repower will result in a net emissions reduction. This funding can cover up to 50% of the cost (labor and equipment) of an eligible engine repower.

1) For a repower that involves the replacement of an existing diesel propulsion engine with a stationary or auxiliary diesel powered electric generator (genset), the electric generator and the newer, cleaner engine comprising the genset are both eligible costs of the repower, subject to the cost-share requirement defined above.

2) Repower of an existing genset involves replacing the existing diesel engine in the genset with a newer, cleaner engine. Only the newer, cleaner engine (labor and equipment) is an eligible cost of the repower, subject to the cost-share requirement defined above.

3) Repower Disposal Criteria: Repower projects are eligible for funding on the condition that the replaced engine is properly disposed of, which must include destruction of the engine block. Evidence of appropriate disposal, including the engine serial number, is

required in a final assistance agreement report submitted to DAQ. Drilling a hole in the engine block and manifold while retaining possession of the engine is an acceptable scrapping method. Other methods may be considered and will require prior DAQ approval. If scrapped or salvaged engines are to be sold, program income requirements apply:

- a) Nonroad Engines: The engine being replaced must be scrapped or rendered permanently disabled or returned to the original engine manufacturer for remanufacturing to a certified cleaner emission standard.
- b) Highway Engines: The engine being replaced must be scrapped or rendered permanently disabled or returned to the original engine manufacturer for remanufacturing to MY 2007 or newer certified emission standards.

**d. Vehicle and Equipment Replacements:** Nonroad and highway diesel vehicles and equipment can be replaced under this program with newer, cleaner vehicles and equipment that operate on diesel or alternative fuels and use engines certified by EPA and, if applicable, CARB to meet a more stringent set of engine emission standards. Replacement projects can include the replacement of diesel vehicles/equipment with newer, cleaner diesel or hybrid or alternative fuel vehicles/equipment. The replacement vehicle/equipment must be of the same type and similar gross vehicle weight rating or horsepower as the vehicle/equipment being replaced (e.g., a 300 horsepower bulldozer is replaced by a bulldozer of similar horsepower). The replacement vehicle/equipment must perform the same function as the vehicle/equipment that is being replaced (e.g., an excavator used to dig pipelines would be replaced by an excavator that continues to dig pipelines).

**1) Nonroad diesel vehicles and equipment** - This funding can cover the incremental cost of a newer, cleaner vehicle or piece of equipment powered by a 2011 model year or newer certified nonroad engine, up to 25% of the cost of an eligible replacement vehicle/equipment. Nonroad engine emission standards are on EPA's website at: [www.epa.gov/otaq/standards/nonroad/index.htm](http://www.epa.gov/otaq/standards/nonroad/index.htm).

a) For stationary or auxiliary diesel powered electric generator (genset), replacement means the removal of the entire genset and its replacement with a newer, cleaner genset. The electric generator in a genset together with the newer, cleaner engine is an eligible cost of the replacement, subject to the cost-share requirement defined above.

**2) Highway diesel vehicles and equipment** - This funding can cover the incremental cost of a newer, cleaner vehicle or piece of equipment, powered by an engine certified to the 2011 model year or newer standards for highway heavy-duty engines, up to 25% of the cost of an eligible replacement vehicle/equipment, that:

a) is particulate filter equipped (or catalyst equipped in the case of a compressed natural gas (CNG) engine); and

b) meets regulatory requirements for vehicles or equipment manufactured in 2011 or later.

**3) Replacement Criteria:** Replacement projects are eligible for funding on the condition that the following criteria are satisfied:

a) The vehicle/equipment being replaced will be scrapped or rendered permanently disabled or returned to the original engine manufacturer for remanufacturing to a certified cleaner emission standard. Drilling a hole in the

engine block and manifold and disabling the chassis while retaining possession of the vehicle/equipment is an acceptable scrapping method. Other methods may be considered and will require prior DAQ approval. Equipment and vehicle components that are not part of the engine or chassis may be salvaged from the unit being replaced (e.g. plow blades, shovels, seats, tires, etc.). If scrapped or salvaged vehicles/parts are to be sold, program income requirements apply.

**b)** Evidence of appropriate disposal (such as a photograph of the scrapped equipment), including engine serial number and vehicle identification number (VIN), is required in a final assistance agreement report submitted to DAQ.

**e. Repower and Replacement Restrictions:** This restriction applies to all repower and replacement projects as defined above. The following activities **are not eligible** for funding under this RFP:

**1)** Repowers or replacements that would have occurred through normal attrition within 3 years of the project period start date are considered to be the result of normal fleet turnover and are not eligible for funding under this program. Normal attrition is generally defined as a replacement or repower that is scheduled to take place between now and the end of the project period. Normal attrition is typically defined by the vehicle or fleet owner's budget plan, operating plan, standard procedures, or retirement schedule. For example, if a school bus fleet typically retires vehicles after 20 years, a bus that is currently in its 18th or 19th year of service is not eligible for replacement. A bus that is currently in its 17th year of service and has three years of useful life remaining (as defined by the fleet's retirement schedule) is eligible for replacement.

All eligible projects must be early attrition projects. Early attrition refers to a project where a vehicle/engine is replaced/repowered well before that vehicle/engine is scheduled to be replaced/repowered. Any replaced/repowered vehicle/engine that is due to be replaced/repowered, scheduled to be replaced/repowered, or has a life expiration date before September 30, 2015 is NOT eligible for these funds.

**2)** The purchase of new vehicles or equipment to expand a fleet is not covered by this program.

**3)** Additional funding restrictions for repower and replacement projects are described in Table 1 and Table 2, below.

**Table 1: Nonroad Engine Funding Restrictions**

		Repowered or Replaced Engine and Equipment Tier Level				
		Tier 0 / Unregulated	Tier 1	Tier 2	Tier 3	Tier 4
Original Engine and Equipment Tier Level	Tier 0 / Unregulated	No	No	Yes	Yes	Yes
	Tier 1	No	No	Yes	Yes	Yes
	Tier 2	No	No	No	No	Yes
	Tier 3	No	No	No	No	Yes

**Table 2: Marine Engine Funding Restrictions**

		Repowered or Replaced Engine and Equipment Tier Level			
		Tier 0 / Unregulated	Tier 1	Tier 2	Tier 3
Original Engine and Equipment Tier Level	Tier 0 / Unregulated	No	Yes	Yes	Yes
	Tier 1	No	No	Yes	Yes
	Tier 2	No	No	No	Yes
	Tier 3	No	No	No	No

For the purposes of the FY12 DERA RFP, EPA determined remaining useful life (defined as the length of time from the current year to the point at which the engine or equipment should be retired according to EPA's NONROAD Model) for the following types of nonroad engines and equipment. The following tables display the eligible model years for each type of nonroad engine and equipment for three ranges of horsepower. The model years represented by the cells shaded in green have seven or more years of useful life remaining, as defined by this program, and are eligible for the FY12 DERA RFP. The model years represented by the cells shaded in grey are not eligible.

**Nonroad Engines and Equipment with 0 - 50 Horsepower**

Equipment	Nonroad Engine Model Years														
	1972 - 1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
2-Wheel Tractors															
ACRefrigeration															
Aerial Lifts															
Agricultural Mowers															
Agricultural Tractors															
Airport Support Equipment															
Balers															
Bore/Drill Rigs															
Cement & Mortar Mixers															
Combines															
Concrete/Industrial Saws															
Cranes															
Crawler Tractors															
Crushing/Proc. Equipment															
Dumpers/Tenders															
Excavators															
Forklifts															
Graders															
Hydro Power Units															
Irrigation Sets															
Light Commercial Air Compressors															
Light Commercial Gas Compressors															
Light Commercial Generator Sets															
Light Commercial Pressure Washer															
Light Commercial Pumps															
Light Commercial Welders															
Logging Equip Fell/Bunch/Skidlers															
Logging Equipment Chain Saws > 6															
Logging Equipment Shredders > 6															
Off-Highway Tractors															
Off-highway Trucks															
Other Agricultural Equipment															
Other Construction Equipment															
Other General Industrial Equipment															
Other Material Handling Equipment															
Other Underground Mining Equipment															
Pavers															
Paving Equipment															
Plate Compactors															
Rollers															
Rough Terrain Forklifts															
Rubber Tire Dozers															
Rubber Tire Loaders															
Scrapers															
Signal Boards															
Skid Steer Loaders															
Sprayers															
Surfacing Equipment															
Swathers															
Sweepers/Scrubbers															
Tampers/Rammers															
Terminal Tractors															
Tillers > 6 HP															
Tractors/Loaders/Backhoes															
Trenchers															

**Nonroad Engines and Equipment with 51 - 300 Horsepower**

Equipment	Nonroad Engine Model Years																									
	1972 - 1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
2-Wheel Tractors																										
ACRefrigeration																										
Aerial Lifts																										
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Airport Support Equipment																										
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Tampers/Rammers																										
Terminal Tractors																										
Tillers > 6 HP																										
Tractors/Loaders/Backhoes																										
Trenchers																										

**Nonroad Engines and Equipment with 300+ Horsepower**

Equipment	Nonroad Engine Model Years																												
	1972 - 1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005 - 2012	
2-Wheel Tractors																													
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**Mandated Measures Information**

Please refer to the FY12 DERA Request for Proposals, Section III.D.1, for additional information

**C1 and C2 Marine Engine Eligibility for DERA Funds – Mandated Measures Information**

Background – Since marine engines last a long time, EPA’s 2008 Locomotive and Marine Engine Rule covers existing marine diesel engines when they are upgraded, remanufactured, or rebuilt. This mandated measure, referred to as EPA’s Marine Remanufacture program, requires a vessel owner to use a certified remanufacture system when it comes time to remanufacture their marine engine, if one is available. The program covers Category 1 (C1) and Category 2 (C2) marine diesel engines above 800 horsepower (hp) with displacement less than 30 liters per cylinder. Category 3 (C3) engines are those at or above 30 liters per cylinder, typically these are the largest engines rated at 3,000 to 100,000 hp. C3 engines are not included in this rule. They are typically used for propulsion on ocean-going vessels and are covered by a separate C3 Marine Rule.

C1 and C2 marine diesel engines typically range in size from about 700 to 11,000 hp. These engines are used to provide propulsion power on many kinds of vessels including tugboats, towboats, supply vessels, fishing vessels, and other commercial vessels in and around ports. They are also used as stand-alone generators for auxiliary electrical power on many types of vessels. C1 represents engines up to 7 liters per cylinder displacement. C2 includes engines from 7 to 30 liters per cylinder.

DERA funds may not be used to pay for mandated measures. The 2008 Marine Engine Rule, which is a mandated measure, applies to a subset of marine engines and could therefore cause a project to be ineligible to receive DERA funds. This guidance can be used to determine if an engine is or is not subject to the rule, and therefore if that engine may be eligible for DERA funding.

Eligibility – A marine engine is eligible to receive DERA funding for an upgrade if it is not subject to the Marine Engine Rule. If an engine is subject to the Marine Engine Rule, the project still may be eligible to receive DERA funding, but only if the applicant can demonstrate, through maintenance and use records, that the proposed upgrade is in advance of when it would have normally been upgraded without DERA funds. Please follow the attached flowchart to determine if your project may be eligible for DERA funding.

Emissions Calculations – To calculate the emissions reductions of a marine repower or upgrade that is subject to the Marine Engine Rule, the applicant can only count those emissions reductions from the time of the upgrade or repower using DERA funds up to the time that the engine would have been overhauled if DERA funds were not available.

Funding – EPA will provide up to 50% of an eligible marine engine upgrade. Although these projects are eligible, EPA may offer less than 50% to any project. For marine upgrade projects, EPA should assess the overall scope of project and determine if it is appropriate to negotiate with the applicant to provide less than 50% funding, if that upgrade would most likely occur in the future without DERA funding. Regions should use their judgment on the percentage of funds that should be offered, and should take into account factors such as how far in advance from the engine’s normal schedule the upgrade is occurring, and how large the emissions reductions will be.

**Mandated Measures Information**

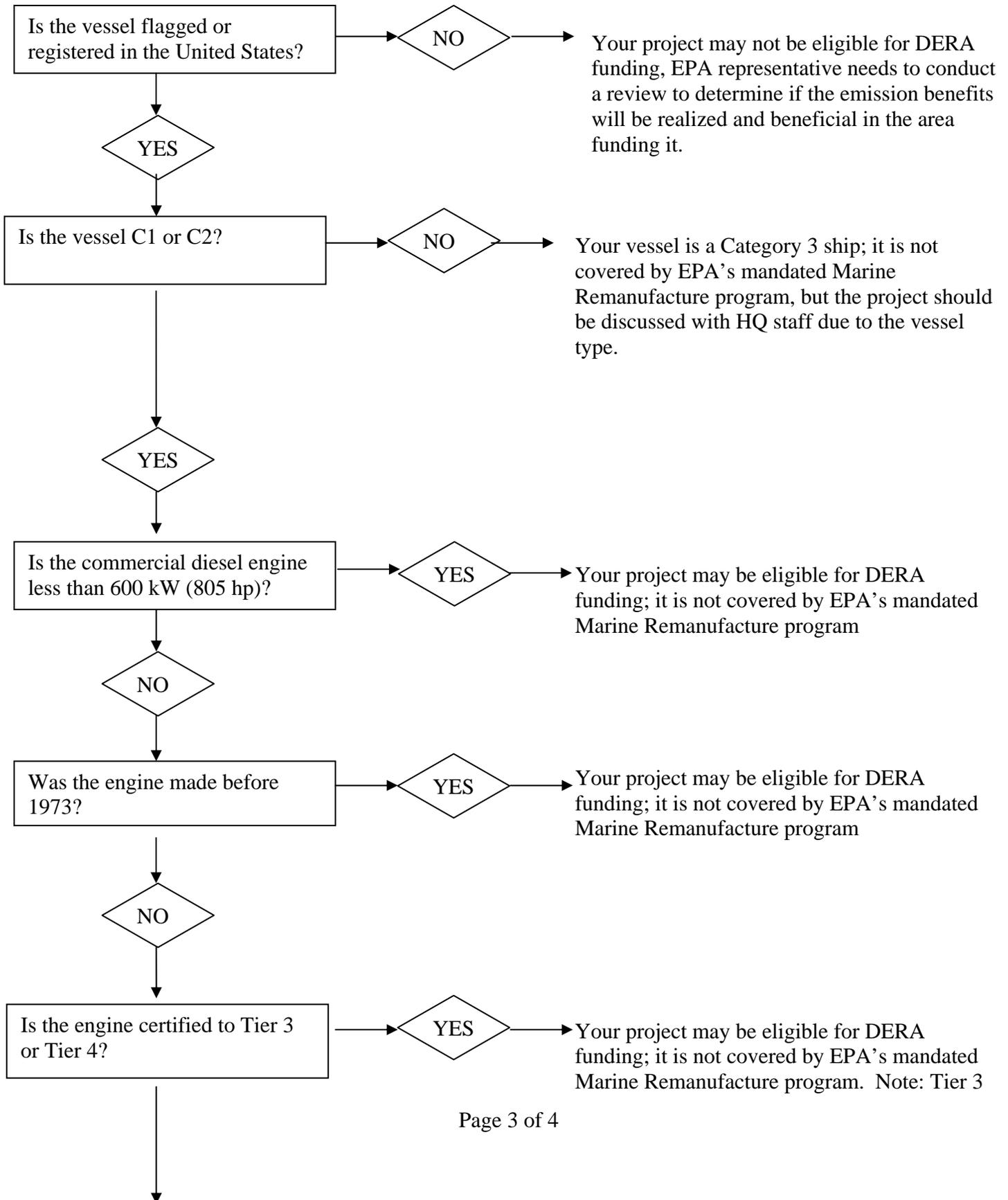
Please refer to the FY12 DERA Request for Proposals,  
Section III.D.1, for additional information

Example: 1985 marine engine is expected to be repowered in 2016. At that time, the engine will be required to be upgraded from an unregulated engine to a Tier 1 engine. The applicant is proposing to use DERA funds to repower the engine to a Tier 2 in 2011.

- Assuming using the flowchart below, the project was deemed eligible for DERA funding.
- 100% of the emission reductions are attributable to DERA funds for 2011 – 2016.
- From 2016 to the end of engine life, emission reductions are attributable to DERA funds for the difference between a Tier 1 engine and a Tier 2 engine.
- EPA may negotiate with the applicant to offer less than 50% funding.

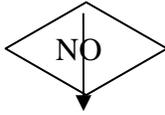
Please refer to the FY12 DERA Request for Proposals, Section III.D.1, for additional information

Commercial Diesel Marine Engine Eligibility flowchart:



Please refer to the FY12 DERA Request for Proposals, Section III.D.1, for additional information

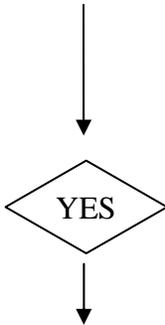
and Tier 4 engines are already very clean, so projects involving these engines should be closely evaluated to ensure funding for additional emission reductions are appropriate and cost effective.



With the marine engine model and model year in hand, please look at EPA's Marine Remanufacture Kit List, located on EPA's website: <http://www.epa.gov/otaq/certdata.htm>  
Does the engine have a certified remanufacture system?



Your project may be eligible; it is covered by EPA's mandated Marine Remanufacture program, however a kit is not available at this time and DERA funds may be used. Note: Regions should confirm with HQ staff that a kit will not be imminently certified for this engine.



The commercial marine diesel engine is covered by EPA's Marine Remanufacture Program and requires the use a certified remanufacture system. This project may not be eligible for DERA funding. If, however, the applicant can demonstrate, through maintenance and use records, that the proposed upgrade or repower is in advance of when it would have normally been upgraded or repowered, then it can be eligible for DERA funding. The EPA representative needs to provide justification on why the project was deemed eligible and not covered by EPA's Marine Remanufacture Program.