



## MASSCLEANDIESEL

### Vehicle Repower Program

Massachusetts Department of Environmental Protection

## FUNDING AVAILABLE TO REPOWER OFF ROAD HEAVY-DUTY WHEELED FRONT-END LOADERS

**Application Deadline: April 30, 2014**

The Massachusetts Department of Environmental Protection (MassDEP) is pleased to announce the availability of funding under the 2013 MassCleanDiesel: Vehicle Repower Program to reduce harmful diesel exhaust from diesel heavy-duty wheeled front-end loaders serving or operating at Massachusetts facilities. MassDEP is providing funding assistance for repower technology to owners of Caterpillar diesel-powered off road wheel loaders from 125 to 299 rated horsepower (hp). Under this Program, MassDEP will offer eligible engine owners at these facilities 50 percent of the part and labor costs to repower their engines from Tier 0 to Tier 1 standards. Grant recipients will be responsible for 50 percent of the part and labor costs associated with repowering their eligible off road wheeled front end loaders.

#### **What is Repower?**

An engine repower is defined as the replacement of an older, dirtier engine in a vehicle with a new or remanufactured engine built to more stringent emissions standards.

#### **Purpose of the Vehicle Repower Program**

The purpose of the *MassCleanDiesel: Vehicle Repower Program* is to reduce public and worker exposure to diesel emissions in and around facilities that handle bulk materials, including road salt storage and distribution facilities, asphalt plants, concrete plants (ready-mix and product manufacturing), and stone/sand mining or quarrying plants.

Many of these types of facilities are located in densely populated urban areas that are designated as environmental justice communities. Sensitive populations that live, work and play near these facilities, including young children and the elderly, can be adversely affected by increased exposures to diesel vehicle emissions.

## Benefits of the Vehicle Repower Program

The vehicle repower program not only benefits those directly around the targeted vehicles, but also improves the air quality for those communities adjacent to the facilities. By replacing an unregulated Tier 0 engine (i.e., uncontrolled diesel emissions from older and dirtier engines in the diesel fleet) with a Tier 1 engine, diesel emissions (including nitrogen oxides (NOx), particulate matter (PM), hydrocarbons (HC), and carbon monoxide) are significantly reduced as shown in the Table below. Tier 1 emission standards were adopted in 1994 for diesel engines greater than 50 Hp (37 kW) that were subsequently phased-in between 1996 and 2000.

The Table below shows specifically the emission reductions that can be achieved with a repower of a Tier 0 engine with a more efficient Tier 1 engine for two engine sizes.

Engine Size	Engine Emission Conditions	Emissions Per Vehicle (t/yr)				
		NOx	PM <sub>2.5</sub>	HC	CO	Total
175 Hp	Tier 0 Uncontrolled	1.06	0.07	0.09	0.62	1.84
	Tier 1 Standards	0.71	0.04	0.04	0.16	0.95
	<b>Net Reductions</b>	<b>0.35</b>	<b>0.03</b>	<b>0.05</b>	<b>0.46</b>	<b>0.89</b>
300 Hp	Tier 0 Uncontrolled	1.85	0.15	0.16	1.11	3.27
	Tier 1 Standards	1.24	0.09	0.07	0.29	1.69
	<b>Net Reductions</b>	<b>0.61</b>	<b>0.06</b>	<b>0.09</b>	<b>0.82</b>	<b>1.58</b>

*Emission reductions are calculated assuming that the vehicle operate on average 1,500 hours per year.  
(t/y): tons per year*

In addition to the environmental and health benefits of the vehicle repower, the cleaner/newer engines may improve the vehicle's performance resulting in fuel savings.

## Requirements for the Vehicle Repower Program

- **OWNERSHIP:** Must be the owner of a Caterpillar wheeled front end loader from 125 to 299 rated horsepower. (LEASED AND/OR RENTED VEHICLES ARE NOT ELIGIBLE)
- **SERVICE AREA:** The vehicle operates at plants in Massachusetts that handle bulk materials, including road salt storage and distribution facilities, asphalt plants, concrete plants (ready-mix and product manufacturing), and stone/sand mining or quarrying plants.
- **LENGTH OF OWNERSHIP:** Applicants must retain vehicles for a minimum of **three years after** engine repower. Owners of repowered vehicles will be responsible for the pro-rated cost of the

technology and installation if vehicles are sold, discontinued from use, or used exclusively in another state before the end of the three-year period.

• **ENGINE CHARACTERISTICS:**

- The model year of the vehicle to be repowered is after 1974.
- The eligible engine must be a Caterpillar wheeled front end loader from 125 to 299 rated horsepower.
- Engine must be in operational condition for at least two years and documentation to that effect must be included with in the application.
- The engine that is removed must be received into a remanufacturing program in which it will be remanufactured to higher emissions standards.

**Vehicle Repower Program Grant Details**

MassDEP will fund 50 percent of the part and labor costs. Grant recipients will be responsible for 50 percent of the part and labor costs associated with the repowering of their eligible wheeled front end loaders. *For Example:*

<i>Caterpillar Engine</i>	<i>Part &amp; Labor Cost*</i>	<i>Applicant Cost Share*</i>
<i>Remanufactured</i>	<i>\$44,400</i>	<i>\$22,200</i>
<i>New</i>	<i>\$55,200</i>	<i>\$27,600</i>

*\*Approximate Estimate*

Although the table above provides reasonable cost estimates, final costs will only be know when the final invoice is prepared. Southworth MiltonCAT (the vendor on state contract to perform repowers) will make every effort possible to provide the best value to the engine owner.

**Vehicle Repower Program Vendor Information**

MassDEP has pre-qualified Southworth Milton, Inc., dba MiltonCAT to provide the repower technology for the Caterpillar wheeled front end loader. **Due to the complex nature of an engine repower, applicants are strongly encouraged to use MiltonCAT to help complete the application.** The Repower contact at MiltonCAT is Mr. Wayne Clark, and can be reached by phone at (508) 482-1616 or via email at [wayneclark@miltoncat.com](mailto:wayneclark@miltoncat.com).

**Applying for the Vehicle Repower Program**

Applications will first be evaluated for administrative completeness (i.e., all sections must be completed). If an application is deemed administratively incomplete, MassDEP may request that the applicant submit additional information. Funding will be competitively awarded from among the pool of administratively complete applications. MassDEP will give priority to applicant vehicles operating in

close proximity to schools, hospitals, nursing homes, day-care facilities, areas of high population density, environmental justice communities, and areas with elevated incidences of pediatric asthma.

Once applications are selected for funding, MassDEP will send each grant recipient an award letter and an End-User Agreement that, upon execution, binds the grant recipient to all applicable federal and state requirements associated with the grant award. The End-User Agreement will also list the specific vehicle to receive the repower technology.

MiltonCAT will furnish a written quote with a price that will be valid for 60 days on the particular machine that is approved by MassDEP to be repowered.

### **Technology Installation Process**

Upon receipt of the executed End-User Agreement, MassDEP will issue an Equipment Reservation Form to the technology vendor. This Reservation Form will serve as the purchase order for procuring the technology. Where applicable, the vendor may **separately** issue an invoice or establish credit terms with the grant recipient related to the grant recipient's cost share portion of the procurement.

The installation will occur at a mutually convenient time for the vendor and engine owner. When the repowered engine installation is completed, the vendor will prepare a payment form, co-signed by the vehicle owner, and submit to MassDEP for payment. Engine owners will be responsible for up to 50% of the total cost of the engine repower as a cost-share under this program that is payable directly to the vendor.

### **Application Deadline**

Applications for this funding opportunity are due **April 30, 2014 by 5:00 p.m.** Only hard copy applications with original signatures will be accepted. Completed applications should be submitted to:

Ms. Sejal P. Shah  
MassDEP Bureau of Waste Prevention  
One Winter Street, 6th Floor  
Boston, MA 02108

### **MassDEP Contact Information**

Questions or comments should be directed to Sejal P. Shah at 617-556-1015 or [sejal.shah@state.ma.us](mailto:sejal.shah@state.ma.us), or Richard Blanchet at 617-0654-6585 or [richard.blanchet@state.ma.us](mailto:richard.blanchet@state.ma.us).